INDUSTRIAL MEDICINE AND SURGERY

Volume 25 FEBRUARY 1956 Number 2

"140 million working hours are lost annually as a result of dysmenorrhea . . . one third of all young women in America are afflicted with it."[1]

how to cut the terrible cost of DYSMENORRHEA

You can cut lost time in your organization by making sure 'Edrisal' is in the dispensary. A combination of Benzedrine* Sulfate—which is both antidepressant and antispasmodic—and two highly effective analgesics, 'Edrisal' is virtually specific in dysmenorrhea. It relieves the depression, the cramps, the pain.

Order 'Edrisal' today and save countless working hours now being lost to dysmenorrhea. It is available through regular drug channels in bottles of 50 and 500 tablets.

E

Analgesic • Antispasmodic • Antidepressant

EDRISAL*

TWO TABLETS EVERY 3 HOURS

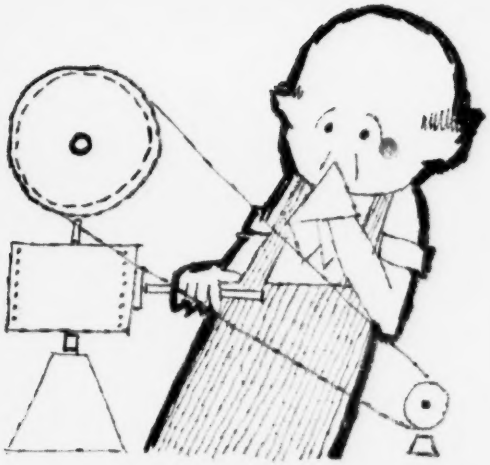
Formula: Each 'Edrisal' tablet contains:

'Benzedrine' Sulfate	2.5 mg.
(racemic amphetamine sulfate, S.K.F.)	
Aspirin	2.5 gr.
Phenacetin	2.5 gr.

SMITH, KLINE & FRENCH LABORATORIES, PHILADELPHIA

*T.M. Reg. U.S. Pat. Off.

1. M. Times 76:416



KEEP LOST-TIME DOWN

...combat cold symptoms with new **CORYBAN***

Wintertime's increased incidence of colds can cut sharply into production schedules and efficiency ratings.

But now . . . for just a fraction of the cost of lost man-hours . . . you can reduce lost-time due to cold symptoms with this new CORYBAN "anti-cold" program.

CORYBAN combines an effective, low-side-effect antihistamine with APC, vitamin C and new, purified hesperidin (to strengthen the capillary wall). This CORYBAN combination provides quick, effective relief of cold symptoms and helps guard against re-invasion. To begin a CORYBAN "anti-cold" program in your plant, contact your usual source of supply, or write:

Industrial Sales Division
J. B. Roerig and Company
536 Lake Shore Drive
Chicago 11, Illinois

Each CORYBAN *capsule contains:*

Purified Hesperidin	20 mg.
Ascorbic Acid	20 mg.
Salicylamide	230 mg.
Acetophenetidin	130 mg.
Caffeine	30 mg.
Prophenpyridamine Maleate	10 mg.

Dosage: As directed on package.
Supplied: Bottles of 12 capsules.

ROERIG Rx *Chicago 11, Illinois*

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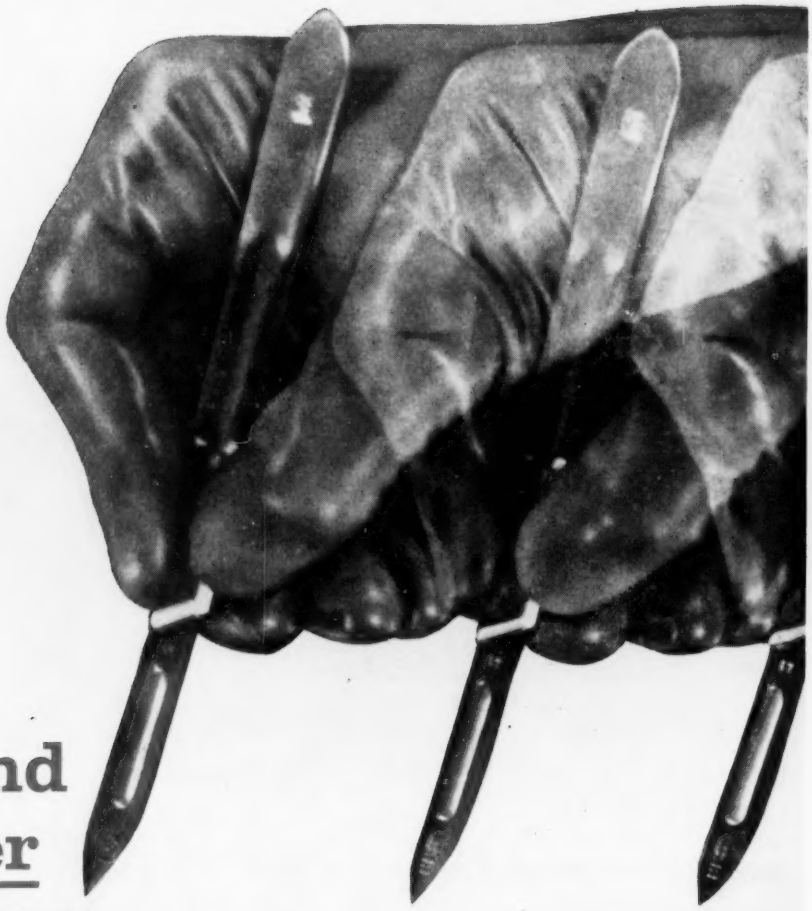

and after surgery...

FURACIN® soluble dressing–antibacterial protection without retarding healing

- bactericidal to the majority of pathogens found in surface infections*
- does not retard epithelization or granulation*
- foul wound odor is improved within 24 hours*
- water-miscible base mixes freely with wound exudates to reach infected areas without tissue maceration
- sensitization in surgical use is generally not more than 1%
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For topical antibacterial therapy in: surgery • severe burns • skin grafting • ulcers • pyodermas • first aid treatment of abrasions, lacerations

*Shipley, E. R., and Dodd, M. C.: Surg., Gynec. & Obst. *84*: 366, 1947.

FORMULA: Furacin Soluble Dressing contains Furacin (brand of nitrofurazone) 0.2%, dissolved in a water-soluble, ointment-like base of polyethylene glycols.
SUPPLIED: 2 oz. tube; 4 oz., 1 lb. and 5 lb. jars.

Two other convenient forms of Furacin for surgical use allow for adaptation to any technic:

FURACIN® solution

FORMULA: Furacin Solution contains Furacin (brand of nitrofurazone) 0.2%, in a liquid vehicle composed of polyethylene glycols 65%, a wetting agent 0.3% and water.
SUPPLIED: Bottles of 2 fl. oz. and 1 pint.

FURACIN® soluble powder

FORMULA: Furacin Soluble Powder contains Furacin (brand of nitrofurazone) 0.2%, in a powder base composed of completely water-soluble polyethylene glycols.
SUPPLIED: Shaker-top vial of 14 Gm.

EATON LABORATORIES, Norwich, N. Y. **NITROFURANS** a new class of antimicrobials neither antibiotics nor sulfas

INDUSTRIAL MEDICINE AND SURGERY

The Journal of Medicine in Industry

This Journal is dedicated to the advancement of sound industrial medicine, including the surgery of industrial trauma. To that end its varying contents will embrace scientific papers, reports, digests, news items and official statements, together with editorial comment. The editorial policy is to avoid undue censorship. Some contributions ably prepared will be published although contravening the personal opinions of the editors. Care will be exercised in checking the accuracy of known facts, as printed, but in all other respects statements and opinions are those of the author and may not be shared by the editors. On any article, the editors reserve the right to comment favorably or otherwise, in the current or any subsequent issue. On this basis, contributions are invited. The opinions expressed in any contributions, including the editorials of this Journal, do not necessarily reflect the attitude or opinions of any associated organization.

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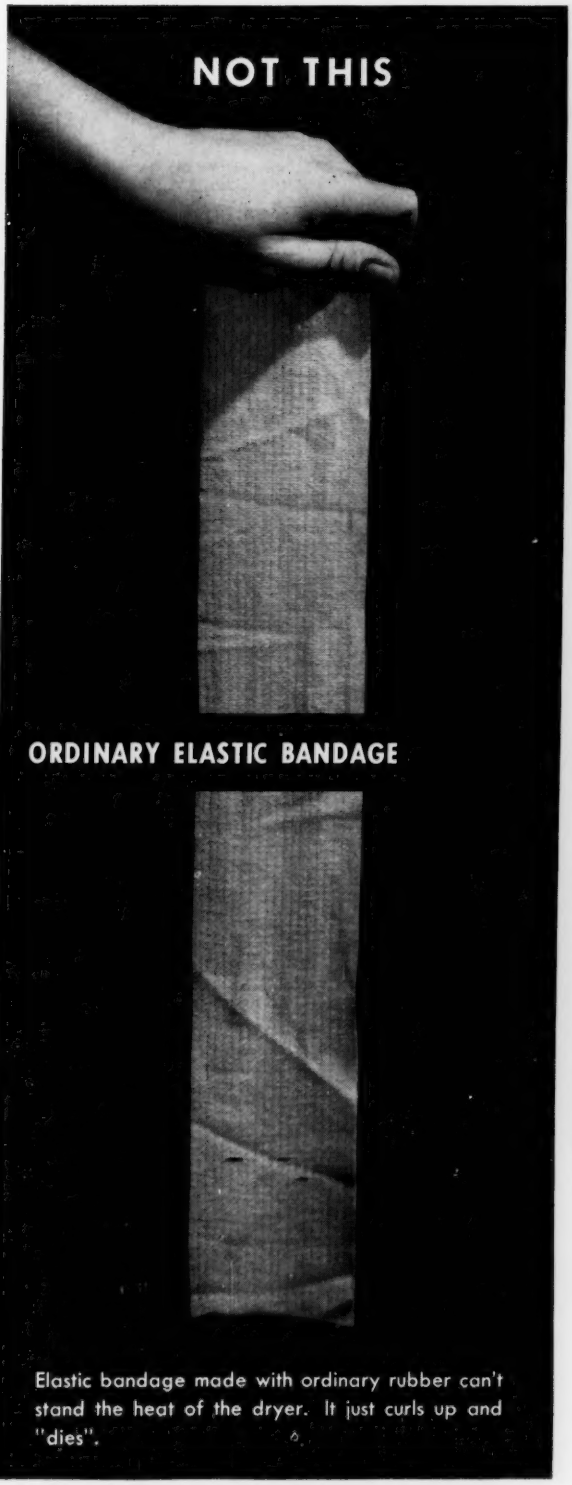
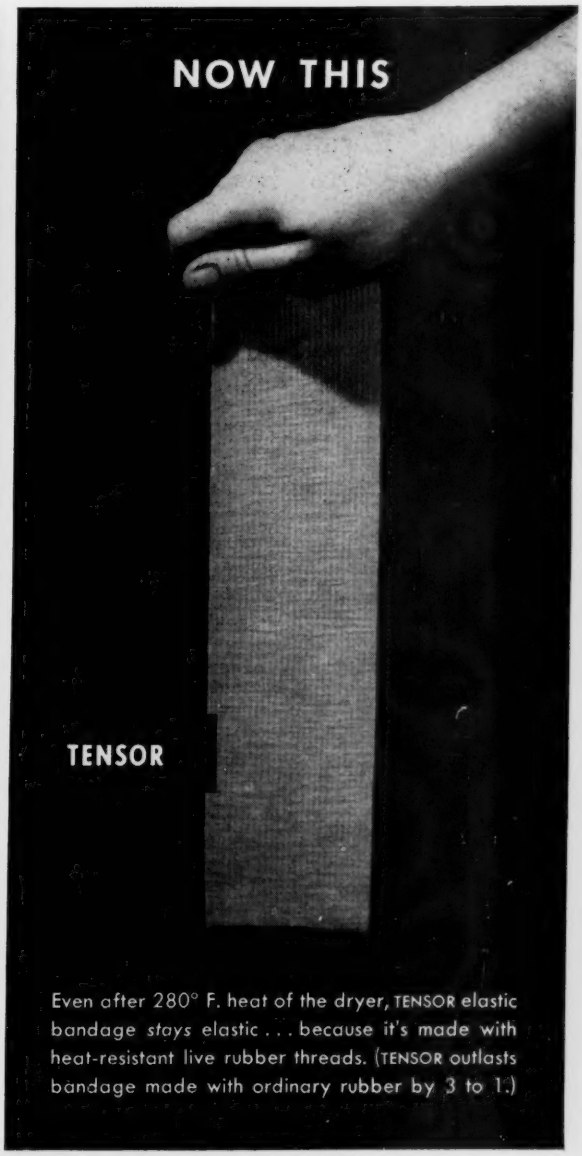
NEW TENSOR DOESN'T "DIE" IN THE DRYER



Elastic bandage made with ordinary rubber can't stand the heat of the dryer. It just curls up and "dies".



Even after 280° F. heat of the dryer, TENSOR elastic bandage *stays* elastic . . . because it's made with heat-resistant live rubber threads. (TENSOR outlasts bandage made with ordinary rubber by 3 to 1.)

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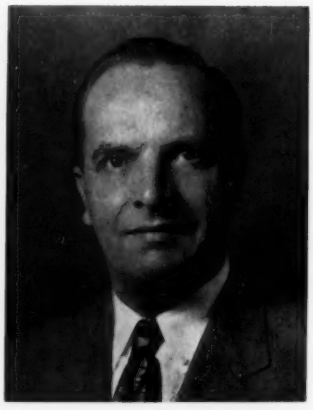

JOHANNES M. L. JENSEN, M.D., has been appointed Chief Surgeon of the Rock Island Lines. DR. JENSEN was born in Racine, Wisconsin, in September, 1906; attended Drake University, 1924-25; received his M.D. degree at Marquette University School of Medicine; interned at Milwaukee County General Hospital. He was a Lieutenant Commander, (MC) USNR, 1943-46, and became identified with the Chicago Rock Island and Pacific Railroad in 1936, where he has been Assistant Chief Surgeon.

JAMES P. HUGHES, M.D., Associate Professor (Occupational Medicine), Department of Preventive Medicine, Ohio State University, Columbus, has been assigned from that Department in the University to serve as Acting Chief Physician for the City of Columbus on a part-time basis. This assignment is for the limited period during which a permanent professional staff can be recruited for the City's new Medical Section, which will be set up within the Mayor's Board of Industrial Relations to handle the new occupational health program for employees of the City. The ordinance establishing the Medical Section was passed by the Council last December as an emergency measure and became effective December 19 when it was signed by the Mayor. The professional staff will include a full-time Chief Physician qualified for occupational medicine. The new program will involve: (1) medical examination of all city employees before job placement; (2) examination of all injured or sick workers; (3) regular physical check-ups on key

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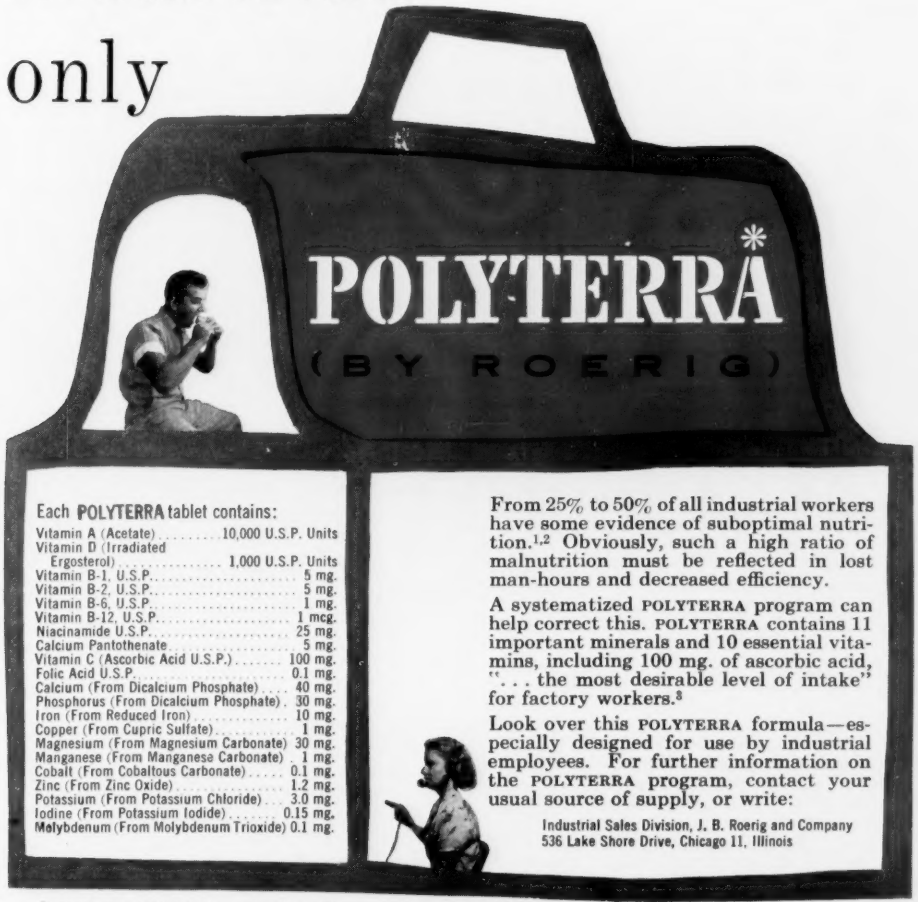

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Niacinamide U.S.P.	25 mg.
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Phosphorus (From Dicalcium Phosphate)	30 mg.
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Copper (From Cupric Sulfate)	1 mg.
Magnesium (From Magnesium Carbonate)	30 mg.
Manganese (From Manganese Carbonate)	1 mg.
Cobalt (From Cobaltous Carbonate)	0.1 mg.
Zinc (From Zinc Oxide)	1.2 mg.
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Iodine (From Potassium Iodide)	0.15 mg.
Molybdenum (From Molybdenum Trioxide)	0.1 mg.

From 25% to 50% of all industrial workers have some evidence of suboptimal nutrition.[1,2] Obviously, such a high ratio of malnutrition must be reflected in lost man-hours and decreased efficiency.

A systematized **POLYTERRA** program can help correct this. **POLYTERRA** contains 11 important minerals and 10 essential vitamins, including 100 mg. of ascorbic acid, "... the most desirable level of intake" for factory workers.[3]

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Dosage: One tablet daily preferably with a meal, or as directed by industrial physician. Supplied: Bottles of 100.

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1. Babcock, M. J., et al: Milbank Mem. Fund Quart.: 32:323 (Oct.) 1954. 2. McLester, J. S. and Darby, W. J.: Nutrition and diet in health and disease. W. B. Saunders and Company, Philadelphia, 1952, p. 584. 3. Pollack, H. and Halpern, S. L.: Therapeutic Nutrition, National Research Council, publication 234, 1952, p. 37.

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personnel, those claiming disabilities, those working with toxic materials or those returning from sick leave; (4) periodic inspection of all city job hazards. If this is not actually the first, it is at least one of the first municipal medical programs established in a city of comparable size.

JAMES K. STACK, M.D., Secretary, American Association for the Surgery of Trauma, announces that Association's Second Annual Award for the best essay submitted on clinical or laboratory research in the field of the surgery of trauma. The winning essay will be selected by a Committee of the Association, and the author will be invited to read it at the Annual Meeting at Santa Barbara, California, October 4, 1956. Also, the paper will appear in the annual issue of the *American Journal of Surgery*. Contestants must be citizens of the United States or of Canada, and be in residency or postgraduate training, or in the formative years of practice or teaching. Manuscripts, accompanied by the curriculum vita of the author, must be in DR. STACK'S office at 700 North Michigan Avenue, Chicago 11, not later than August 1, 1956.

WESTERN INDUSTRIAL MEDICAL ASSOCIATION will hold its Fifteenth Annual Meeting, April 28, 1956, at the Ambassador Hotel in Los Angeles, with a program covering clinical, scientific, and administrative problems and endeavors in industrial medicine.

KENNETH C. PEACOCK, M.D., Industrial Medical Consultant, New York City, has an article in *Personnel Journal*, January, 1956, entitled "Prevention Is the Business of a Medical Department." DR. PEACOCK lists benefits which can be expected from a well-organized and serviced Medical Department as REDUCTIONS in annual compensation costs; in annual health insurance costs; in machine down time; in cost of time and a half for replacements kept overtime; in cost of training replacements; in the total number of employees constantly necessary; in the present and future loss of key-man time and efficiency; in the current and future safety hazards; in time spent by other departments on problems which require medical "know how" (it is surprising how much time is spent by personnel departments and others

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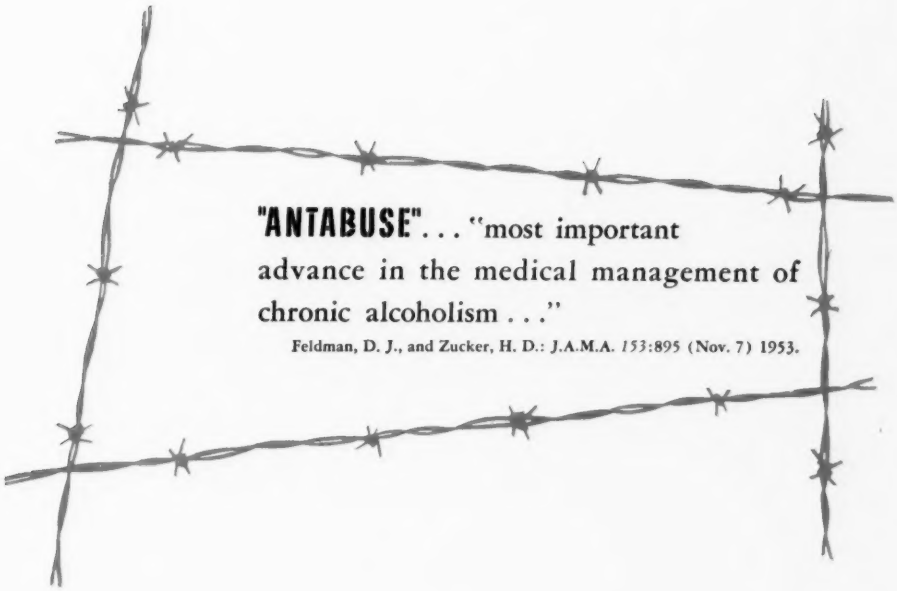
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GRADIE R. ROWNTREE, M.D., Medical Director, Fawcett-Dearing Printing Company, Louisville, Kentucky, was chosen by the President's Committee on Employment of the Physically Handicapped to receive the Physician's Award for 1955. The presentation was made by MAJOR GENERAL MELVIN J. MAAS, (USMCR, Ret.), chairman of the Committee at the banquet session of the Sixteenth AMA Congress on Industrial Health at the Sheraton Cadillac Hotel, Detroit, Monday evening, January 23.

GEORGE F. CATLETT, M.D., has been appointed District Medical Manager of the new Medical Center of United Air Lines at New York International Airport. DR. CATLETT joined United's Medical Department at San Francisco in 1954, after three years as a Flight Surgeon with the U.S. Marine Corps. He is a graduate of Temple University Medical School, Philadelphia; interned at Bryn Mawr Hospital in Pennsylvania; served a two-year residency at Lennox Hill Hospital, New York. United Air Lines Medical Department was established in 1937. G. J. KIDERA, M.D., is Medical Director. In addition to the Medical Center in New York, United has similar facilities in Chicago, Denver, and San Francisco.

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CATHERINE MANGAN MAGUIRE, M.D., Manager of Medical Services, Olin Mathieson Chemical Corporation, New York City, has an article in the *Journal of the American Medical Women's Association*, December, 1955, entitled "History and Scope of Industrial Medicine." This article was one of the papers presented in a Symposium at the Annual Meeting of the American Medical Women's Association, June 4, 1955.

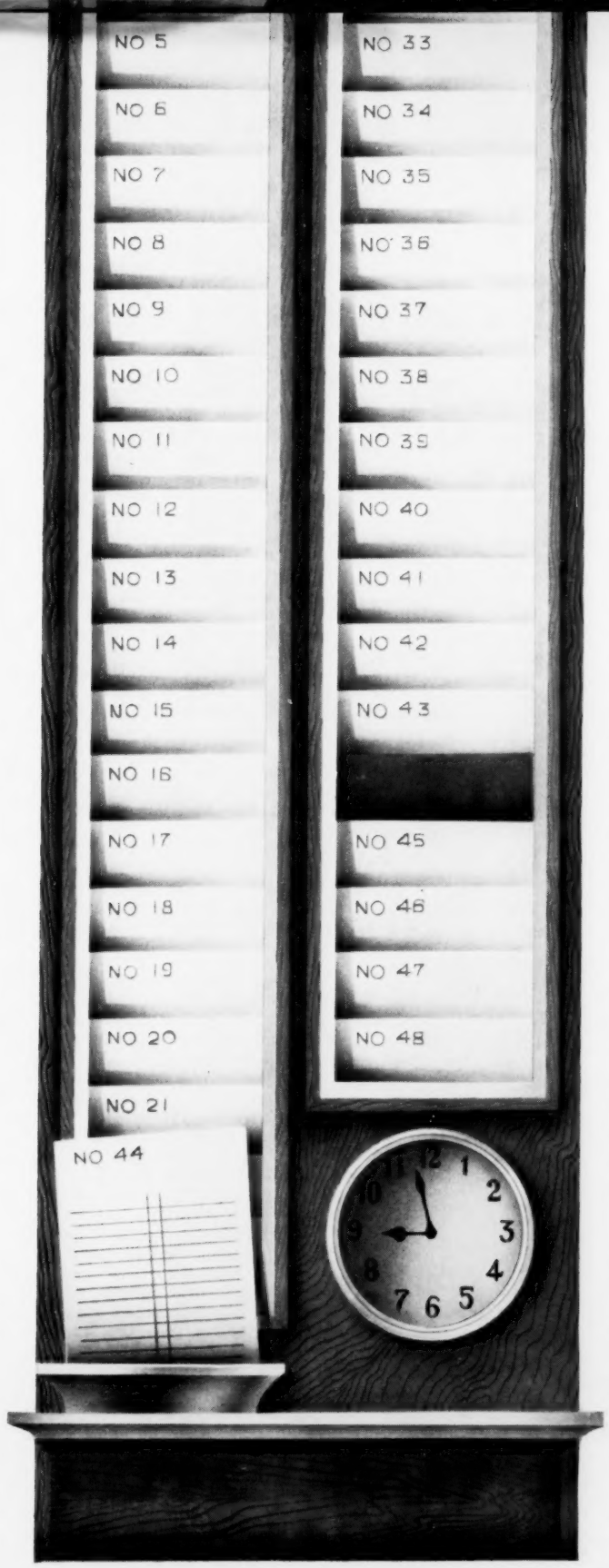
Theodore Van Dellen, M.D.

DR. THEODORE VAN DELLEN (Medical Director, *Chicago Tribune*) dispensed advice, leaflets, humor—but no pills—to 129,073 persons, many in remote parts of the world last year. The Editor of the *Tribune's* "How to Keep Well" department, DR. VAN DELLEN has come to be the friendly adviser to thousands of readers here and in 50 other cities where his column is syndicated. Readers write to him about all kinds of problems, big and little, serious and frivolous. Many express their gratitude for valuable information obtained from reading his column. The writer-doctor has been credited many times with providing the clews to conditions requiring life-saving operations. One woman, troubled for a year with certain symptoms, saw them described in the column. A throat operation resulted. "The help from your column was a life saver for me so I felt I must thank you and let you know the good you have done for a stranger," she wrote. Other readers try to stump the doctor with such involved questions as "Is the polygamous tendency in males produced by the same factor as causes the numerical preponderance in females?" He gave up on that one. The columnist remarked that one way to deflate the doctor's ego is to write as one reader did recently, "I am not able to consult a good doctor so I am writing to you." DR. VAN DELLEN said some writers will do anything to avoid what he called "that naughty word, baldness." Confided a man, "I am troubled with a diffuse thinning of hair above my eyebrows and extending backward." Hair problems are many. "I am threatened with gray hair and I have dandruff in an abundant number," was one writer's worry. Another wrote: "My neighbor, a beautician, has been wearing a wig for two years. She decided to let it go (the wig) and it has grown about three inches." In the same vein was the problem, "My sister, 21, is married to a man three years her senior but he wears a wig. Would there be any danger if she becomes a mother that her children would inherit from the father?" DR. VAN DELLEN, whose sense of humor erupts often in the answers he gives daily in print to specific questions, has been told by many readers how his quips brighten their day. Early last year, a Mrs. T. queried him: "I am curious. Are you an elderly doctor?" He answered, "No, because elderly doctors are at least 10 years older than I am." Actually, the doctor, who never has a year go by without receiving a few marriage proposals in the mail, is good looking, personable, married, and the father of three teen-age children. He took over the column in 1945, as the third in a succession of doctor-writers. Newspaper medical columns were unknown when the *Tribune* pioneered with the first in the country in 1911. With increased research and medical announcements appearing in news columns, reader interest has grown. A flood of mail follows every new medical development. Heart disease is the number one subject in the doctor's mailbag. More women write than men, and many grammar school children use DR. VAN DELLEN'S advice in doing their homework. Four secretaries aid DR. VAN DELLEN in answering the mail. They are MISS MARION CAREY, MISS AGNES BEYER, MISS ANNE KROPACEK, and MISS ROSE PRICE. Whenever possible, they send prepared leaflets on various subjects ranging from bursitis to tonsillectomy. Fifteen new leaflets were added to the library of 300 in 1955 and 29 others revised to bring them up to date. Readers are asked to inclose a stamped, self-addressed reply envelope. DR. VAN DELLEN prepares his columns six weeks in advance. To keep abreast of medical developments, he attends meetings, studies medical journals and books, reads releases from pharmaceutical houses, and accompanies other doctors on their rounds of patients to "keep his finger on the pulse of medicine.

—*Chicago Sunday Tribune*, January 15, 1956.

Anniversary in London

ASSOCIATION OF MEDICAL OFFICERS (England) will celebrate the Twenty-First Anniversary of the establishment of the Association, which falls on September 27, 1956, by holding a special Anniversary Meeting in London during the last week of September. The scientific sessions (except the MACKENZIE MEMORIAL LECTURE) will be held at the London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1—the venue of the first meeting of the Association. On Monday, September 24, following registration in the afternoon, there will be an evening reception at Canterbury Hall, Cartwright Gardens, W.C.1. The London Group of the Association, the Organizers of the Meeting, will be the hosts. The Tuesday, September 25, session will be opened by the Minister of Labour and National Service; the Presidential Address will be given by DR. R. S. F. SCHILLING; this to be followed by a discussion on "The Elderly Worker" with DONALD STEWART, M.D., F.R.C.P. (ED.), Chief Medical Officer, Austin Motor Company, as Chairman. A paper on "The Health Problems of the Older Worker—A Study in Swedish Industry" will be presented by PROFESSOR SVEN FORSSMAN, M.D., Medical Adviser to the Swedish Employers' Confederation; President of the Permanent International Committee on Industrial Medicine; Associate Professor of Occupational Health, Karolinska Institutet, Stockholm. In the afternoon at B.M.A. House, Tavistock Square, W.C.1, R. S. F. SCHILLING, M.D., M.R.C.P., D.P.H., D.I.H., Reader, Nuffield Department of Occupational Health, University of Manchester; Editor, *British Journal of Industrial Medicine*, will deliver the British Medical Association MACKENZIE MEMORIAL LECTURE. On Wednesday M. W. GOLDBLATT, C.B.E., M.D., M.R.C.P., Ph.D., D.I.H., Director, Industrial Hygiene Laboratories, Imperial Chemical Industries, Ltd., will be Chairman of the session on "Research in Occupational Health." The speakers will be the EARL OF VERULAM, M.A., F.I.I.A., COMP.I.E.E., J.P., Chairman, Enfield Rolling Mills, Ltd., and SIR HAROLD HIMSWORTH, K.C.B., M.D., F.R.C.P., F.R.S., Secretary, Medical Research Council. Thursday morning will feature a lecture demonstration on "Weight Handling." A. J. AMOR, C.B.E., M.D., M.Sc., D.I.H., Principal Medical Officer, Imperial Chemical Industries Ltd., will be Chairman, and the speaker will be MR. ROBERT MAXWELL, Senior Physiotherapist, Ardeer Factory, I.C.I. Ltd., Stevenston, Ayrshire. Also



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on Thursday W. BLOOD, O.B.E., M.R.C.S., L.R.C.P., D.I.H., Senior Medical Officer, J. Lyons & Company Ltd., will be Chairman of the meeting at which E. KATHARINE WILLIAMS, B.Sc., M.B., B.Ch., M.R.C.P., D.I.H., Research Group Medical Officer, Atomic Energy Research Establishment, will lecture on "The Impact on Medicine and Industry of the Use of Atomic Energy." In the afternoon PROFESSOR R. E. LANE, M.D., M.Sc., F.R.C.P., Nuffield Professor of Occupational Health in the University of Manchester; Physician, Salford Royal Hospital, will give the JOHN C. BRIDGE MEMORIAL LECTURE. The Anniversary Dinner, at the Royal College of Surgeons, Lincolns Inn Fields, W.C.2., will follow. The Friday session will consider "Mental Health in Industry." L. G. NORMAN, M.D., B.Sc., M.R.C.P., D.P.H., Chief Medical Officer, London Transport Executive, will be Chairman, and the speakers will be R. F. TREDGOLD, M.D., D.P.M., Physician, Department of Psychological Medicine, University College Hospital, and A. HERON, M.Sc., Ph.D., Deputy Director, M.R.C. Group for Research on Occupational Aspects of Ageing, University of Liverpool. The Association extends a cordial invitation to "American colleagues in industrial medicine" to attend the Anniversary Meeting. The Association's plans will be aided if those who contemplate being present from this side of the water will communicate with DR. P. A. B. RAFFLE, London Transport Executive, Griffith House, 280, Marylebone Road, London, N.W.1., England.

Institute of Industrial Health

INSTITUTE OF INDUSTRIAL HEALTH, University of Michigan, at Ann Arbor, on December 12, 1955, was awarded a Certificate of Special Merit by the American Medical Association for Medical Television Pioneering. The presentation of the Certificate was the high point of the Institute's TV program on occupational health research, in the series "Medical Horizons" sponsored and staged by Ciba Pharmaceutical Products. The Institute's program, televised at 9:30 P.M., featured significant developments in research in industrial medicine. OTTO T. MALLERY, JR., M.D., Director of the Institute, was host for the show which took viewers on a tour through the laboratories and facilities of the Kresge Medical Research Building, describing work being done in the fields of dermatology, toxicology, acoustics, and vision. Examples of practical application of recent developments were demonstrated, such as tests which identify those persons likely to be injured by loud noises in factories; tests for possible injurious effects of industrial materials to the skin; and methods of improving lighting conditions on the job. DR. MALLEY also emphasized the importance of periodic check-ups for company executives. Other participants in the program were: DEAN A. C. FURSTENBERG, DR. MERLE LAWRENCE, DR. WALTER BLOCK, DR. RICHARD BLACKWELL, all of the Medical School Faculty, and MR. WARREN COOK, of the School of Public Health.

Presentation of the Certificate of Special Merit to the Institute of Industrial Health, University of Michigan. Left to right, William A. Hyland, M.D., of Grand Rapids, representing the American Medical Association; Otto Tod Mallery, Jr., M.D., Director, Institute of Industrial Health; William T. Strauss, M.D., of Ciba Pharmaceutical Products, Inc.

Died

ARTHUR VINCENT COLE, M.D., November 2, 1955, at Indiana Harbor, Indiana. DR. COLE was born at Mauston, Wisconsin, in July, 1898. He graduated from the University of Wisconsin (B.A., 1919; M.A., 1920); received his M.D. at Rush Medical College in 1922; interned at Madison General Hospital, Madison, Wisconsin and Evanston Hospital, Evanston, Illinois, 1922-23; became identified with Inland Steel Company in that year, as Associate Surgeon, and has acted as Consultant Surgeon since 1937. Also he was Chief Surgeon for Youngstown Sheet and Tube Company and Standard Forge Company, and Local Surgeon for the New York Central Railroad and other industries in the area. He became a member of Central States Society of Industrial Medicine and Surgery, 1931, and a Fellow of the Industrial Medical Association in 1941.

GEORGE ARNOLD HARRIS, M.D., 42, at Toronto, Canada, January 2, 1956. DR. HARRIS was born in Toronto; graduated in medicine from the University of Toronto in 1938; served as Flight Lieutenant with the RCAF during the Second World War. On return to civilian life, engaged in general practice for six years, and then became Chief Medical Officer for Robert Simpson Company. DR. HARRIS was the people's warden of St. Christopher-on-the-Heights Anglican Church. He was one of its charter members. For two years before the completion of the church building, which took place less than a year ago, the church services and Sunday School were held in his home.

JAMES A. BRITTON, M.D., 79, at Altadena, California, January 7, 1956. DR. BRITTON retired in 1941 as Supervisor of Medical Services, International Harvester Company, Chicago. He had been identified with Harvester's Medical Department for 30 years.

a "judicious combination..."

for antiarthritic therapy

SALCORT*

That cortisone and the salicylates have a complementary action has been well established.[1-5] In rheumatic conditions, functional improvement and a sense of feeling well are noted early. No withdrawal reactions have been reported.

One clinician states: "By a judicious combination of the two agents . . . it has been possible to bring about a much more favorable reaction in arthritis than with either alone. Salicylate potentiates the greatly reduced amount of cortisone present so that its full effect is brought out without evoking undesirable side reactions."[1]

INDICATIONS:

Rheumatoid arthritis . . . Rheumatoid spondylitis . . . Rheumatic fever . . . Bursitis . . . Still's disease . . . Neuromuscular affections

EACH TABLET CONTAINS:

Cortisone acetate	2.5 mg.
Sodium salicylate	0.3 Gm.
Aluminum hydroxide gel, dried	0.12 Gm.
Calcium ascorbate	60 mg.
(equivalent to 50 mg. ascorbic acid)	
Calcium carbonate	60 mg.

* U.S. Pat. 2,691,662

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the soothing, protective, healing[1-4] *influence of*

DESITIN®
OINTMENT

is persistent

because it adheres longer to the skin areas being treated . . . does not liquefy or crumble at body temperature, nor is it decomposed by secretions, perspiration, exudate, urine, or excrement.

Non-sensitizing, non-irritant Desitin Ointment . . . rich in cod liver oil . . . has proven clinically dependable for over a quarter century in . . . **diaper rash • eczemas intertrigo • wounds** (especially slow healing) **external ulcers • perianal dermatitis**

Tubes of 1 oz., 2 oz., 4 oz., and 1 lb. jars.

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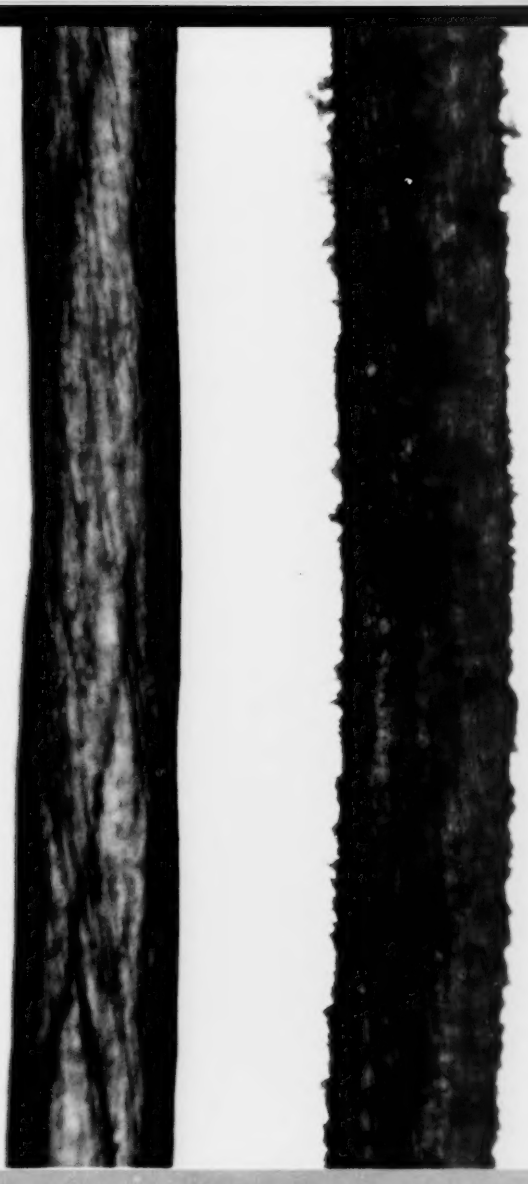
Research shows why D & G gut is stronger

PHOTOMICROGRAPHY SEES WHAT THE HAND CANNOT FEEL

Photomicrographs (unretouched) by E. J. Thomas, Stamford Laboratory of the Research Division of the American Cyanamid Company, Stamford, Conn.

Method used: bright field, 138x. Material used: medium chromic gut, size 5-0.



D & G gut

Photomicrograph shows the smooth surface of D & G SURGICAL GUT, with practically no fraying or roughness. *Reason:* Carefully controlled slitting of plies plus uniform twisting provides a smooth, well-bonded strand. No need to grind it to size. Gentle polishing gave the matte finish. *Result:* the full natural strength of each gut ribbon (ply) is preserved; the strand is not frayed by grinding.

Another leading gut

Photomicrograph reveals rough, frayed surface of another leading brand of gut. This has been ground to size. Gut processed in this way appears very uniform in diameter to the naked eye. But the photomicroscope reveals serious imperfections which may cause fraying and loss of strength when the knot is tied.

see exhibit on next page

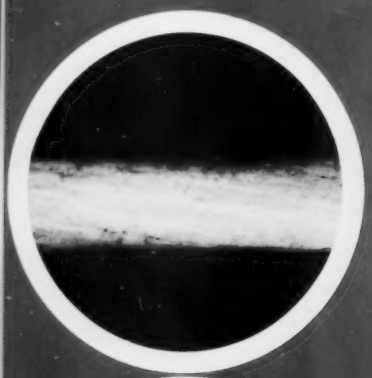
SUTURES AND OTHER D&G SURGICAL SPECIALTIES

DAVIS & GECK INC.

A UNIT OF AMERICAN Cyanamid COMPANY

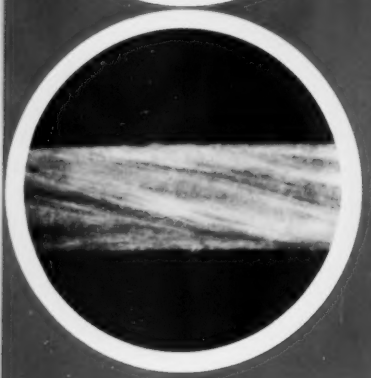
DANBURY, CONNECTICUT

Photomicrography shows why D & G gut is more flexible



D & G GUT

Firm, even cohesion of plies is apparent in this photomicrograph of a D & G SURGICAL GUT suture. **Reason:** plies were twisted into a strand before suture was chromicized. Natural cohesive forces of moist untreated collagen firmly bond the plies together and hold the twist. **Result:** under stress, plies of the suture hold together. The D & G gut is more flexible and knot strength is greater.



ANOTHER LEADING GUT

Photomicrograph detects separate and distinct plies in a strand of another leading brand of surgical gut. Here each ply was chromicized before they were twisted into suture strands. Such "ribbon chromicizing" hardens the surface of each ply, decreasing the natural bonding action, lowering the flexibility and tensile strength of the suture.

Photomicrographs (unretouched) by E. J. Thomas, Stamford Laboratory of the Research Division of the American Cyanamid Company, Stamford, Conn.

Method used: dark field, 38x.
Material used: medium chromic gut, size 00.

see exhibit on previous page

SUTURES AND OTHER SURGICAL SPECIALTIES

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A UNIT OF AMERICAN Cyanamid COMPANY

DANBURY, CONNECTICUT

measuring up!

The doctor's help is often needed if a busy man is to keep his waistline from expanding along with his responsibilities.

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Doctors! Send for the convenient leaflet and diet instruction sheets containing menus for three full meals a day for an entire week. Diets at two moderately low calorie levels are included. These diet instructions will be useful even where a person may require a different calorie level for weight loss. For such individuals, the physician can suggest desired modification, retaining the basic diet plan.

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The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

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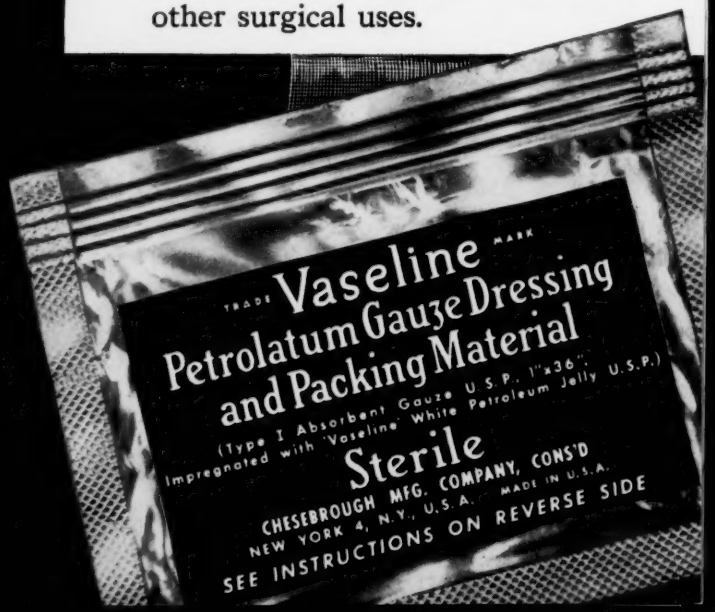
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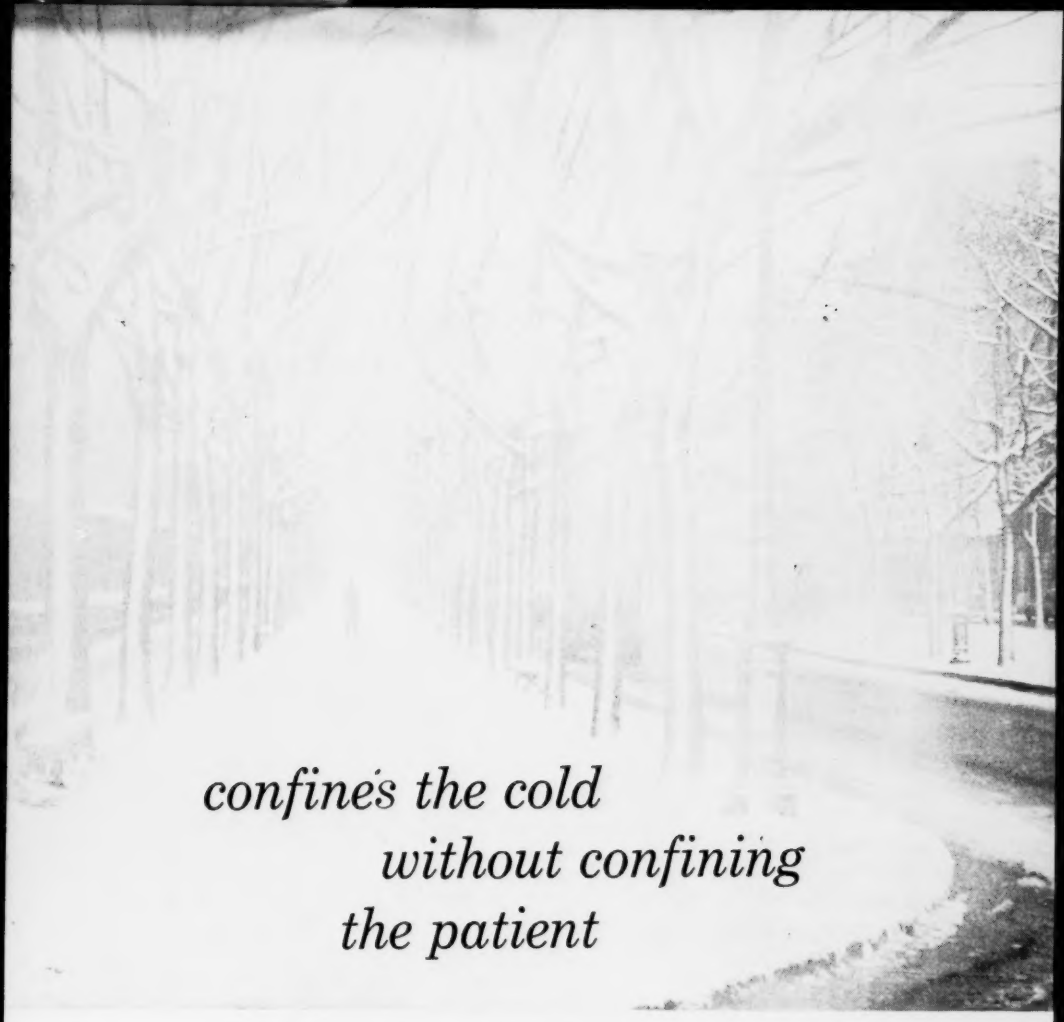

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A Laboratory and Clinical Report on Adrenosem® Salicylate

(BRAND OF CARBAZOCHROME SALICYLATE)

History

The first investigation of a hemostat with an action comparable to Adrenosem Salicylate was made by Derouaux and Roskam[1] in 1937. They reported that an oxidation product of adrenalin, adrenochrome (which has no sympathomimetic properties), has prompt hemostatic activity.

It was further found that various combinations of adrenochrome, notably the oxime and semicarbazone, produced stable solutions. But, these were so slightly soluble that sufficient concentration could not be obtained for practical therapeutic use. By combining these adrenochrome compounds in a sodium salicylate complex a stable, soluble form can be obtained. This complex has been given the generic name, carbazochrome salicylate, and is supplied under the trade name Adrenosem Salicylate.

Roskam, in his study entitled "The Arrest of Bleeding,"[2] enumerates "the drugs whose efficaciousness as hemostatics have been proved by accurate methods in experimental animals and in healthy men as well. . . . One is the monosemicarbazone of adrenochrome [Adrenosem Salicylate]."

Chemistry

Adrenosem Salicylate is a synthetic chemical. The full chemical name is adrenochrome monosemicarbazone sodium salicylate complex.

Pharmacology

Although it is chemically related to epinephrine, Adrenosem Salicylate has no sympathomimetic effects. It does not alter blood components, nor does it affect blood pressure or cardiac rate.[2-7]

(* U.S. Patent 2,581,850)

Sherber, in an early study,[3] concludes that Adrenosem Salicylate* "is a potent antihemorrhagic factor in those conditions in which the integrity of the smaller vessels is interrupted, and is superior to any similar material that is now available."

He continues, "From our experience it appears that adrenochromazone complex is indicated in preventing vascular accidents incident to hypertension; in maintaining small vessel integrity; in the preoperative preparation where oozing from a vascular bed is anticipated, as in tonsillectomies, adenoidectomies and prostatectomies; and as an adjunct in the treatment of bleeding from such surgical procedures."

Adrenosem Salicylate may be administered simultaneously (but separately) with any type of anesthetic, anticoagulant, or vitamin K and heparin.

A Unique Systemic Hemostat

Clinical investigators[2-7] are in agreement that Adrenosem Salicylate controls bleeding and oozing by decreasing capillary permeability and by promoting the retraction of severed capillary ends. It aids in maintaining normal capillary integrity by direct action on the intercellular "cement" in capillary walls. The interesting work of Fulton[8] confirms this. Adrenosem Salicylate, since it is not a vasoconstrictor, has no effect on large severed blood vessels and arterioles.

Adrenosem Salicylate is being used both prophylactically and therapeutically in thousands of hospitals, and in virtually every type of surgical procedure. It has also proved most useful in dental surgery.[7]

Owings reported on the use of Adrenosem Salicylate in controlling postoperative adenoid bleeding in 102 cases.[4] "We have used 2½ mg.

(½ ampule) intramuscularly, 15 minutes before anesthesia for children and 5 mg. (1 ampule) for adults." In only one patient did bleeding occur. Three others showed red blood from the nose and mouth. These patients "were then given 5 mg. intramuscularly, with prompt and complete control. We have also noticed that bleeding stopped more promptly on the operating table."

This is a 1% incidence of postoperative bleeding using Adrenosem Salicylate preoperatively, compared to an incidence of 10% postoperative bleeding in all cases taken from previous records, without Adrenosem Salicylate medication.

Peele reports on the use of Adrenosem Salicylate in treating 178 patients with 24 different conditions.[5] The drug was first used to control postoperative hemorrhage from the adenoid region. He adds: "The results were so dramatic that since that date [1953] Adrenosem Salicylate has been used postoperatively to reduce bleeding from all otolaryngologic and bronchoesophagolic procedures, to treat postoperative hemorrhage from the tonsil and adenoid regions, and to treat selected cases of epistaxis."

The effectiveness of Adrenosem Salicylate in controlling bleeding and oozing in 330 patients is reviewed by Bacala.[6] "Our experience of the effect of carbazochrome salicylate on 317 surgical indications and 13 obstetricogynecological conditions, has been therapeutically encouraging and successful for the control of capillary bleeding. Foremost among the cases studied were 223 tonsillectomies definitely benefited by this metabolic hemostat, making a diminution of the control incidence of posttonsillectomy bleeding of 19.8% down to 7%. It has also been found useful in gastro-intestinal bleeding, cataract extraction, epistaxis, incisional seepage, trans-urethral prostatectomy, menometrorrhagias, cervical ooze, antepartum and postpartum bleeding, threatened abortion, and prevention of capillary hemorrhages during hedulin or dicumerol therapy."

Side Effects

All investigators concur that, at recommended dosage levels, Adrenosem Salicylate is free from toxic effects. No cumulative effects attributable to the drug have been reported.

The only side reaction noted has been a transient stinging sensation in the area of injection when Adrenosem Salicylate is used intramuscularly. As one investigator comments: "The brief discomfort which attends the injection of Adrenosem into the gluteal region has not been a significant problem in children or adults as originally anticipated."[5]

Indications

Idiopathic purpura, retinal hemorrhage, familial telangiectasia, epistaxis, hemoptysis, hematuria.

Postoperative bleeding associated with:
tonsillectomy, adenoidectomy and
nasopharynx surgery;
prostatic and bladder surgery;
uterine bleeding;
postpartum hemorrhage;
dental surgery;
chest surgery and chronic pulmonary bleeding.

Dosage

For recommended dosage schedules, please send for detailed literature.

Supplied

Ampuls: 5 mg., 1 cc. (package of 5).
Tablets: 1 mg. S.C. Orange, bottles of 50.
Tablets: 2.5 mg. S.C. Yellow, bottles of 50.
Syrup: 2.5 mg. per 5 cc. (1 tsp.), 4 ounce bottles.

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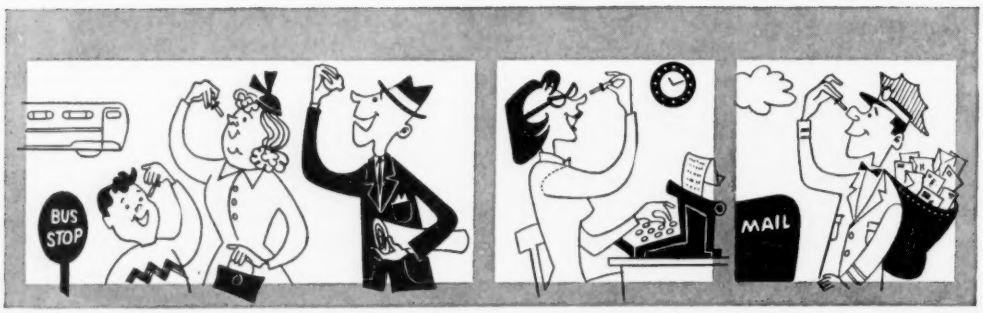

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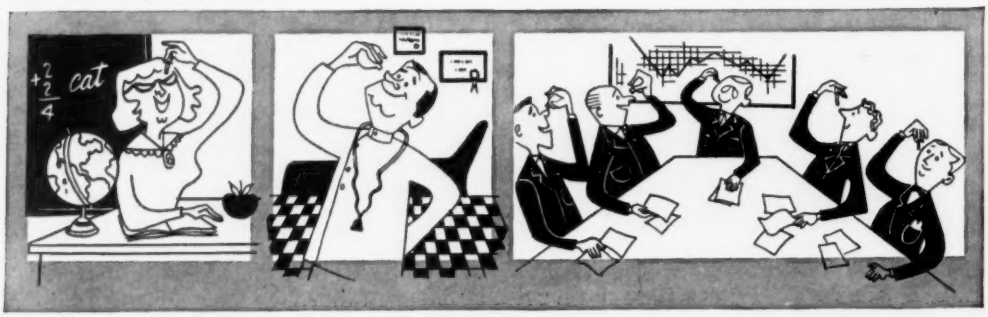

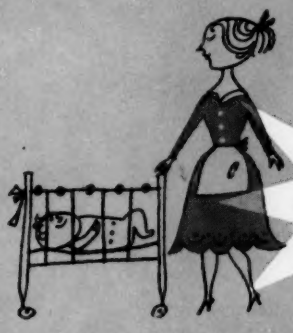

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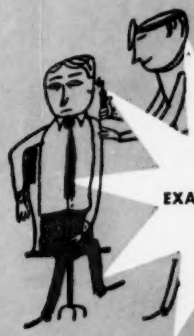

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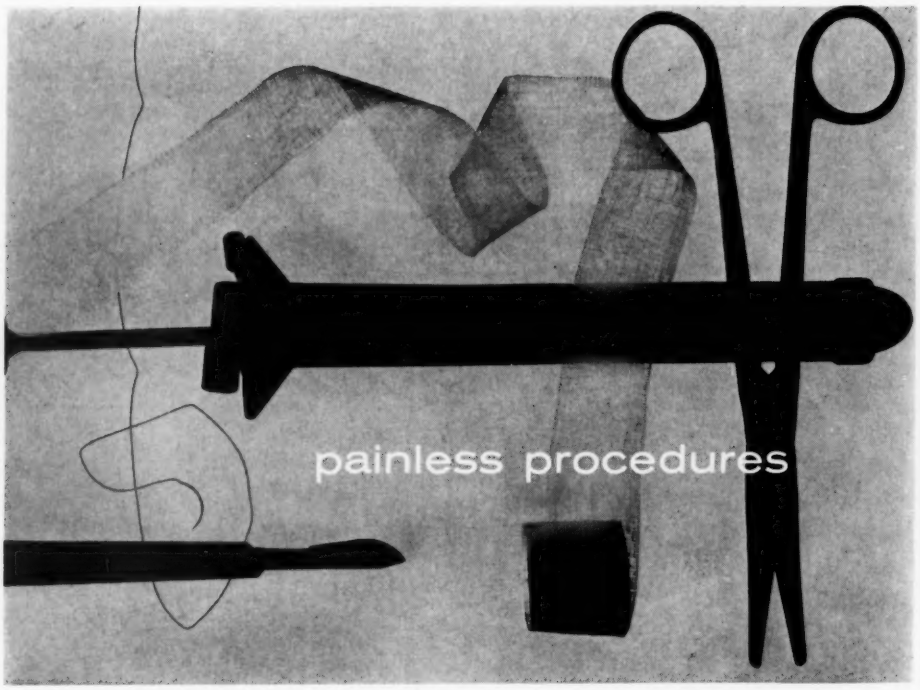

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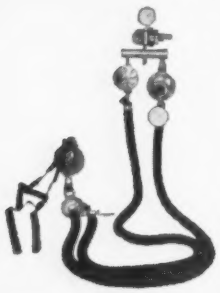

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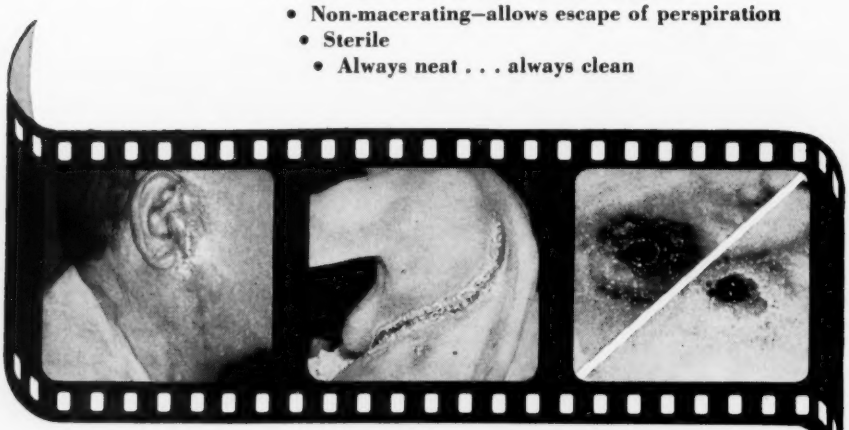

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1. Vibesate (Aeroplast) — New and Nonofficial Remedies, 1955, p. 541.

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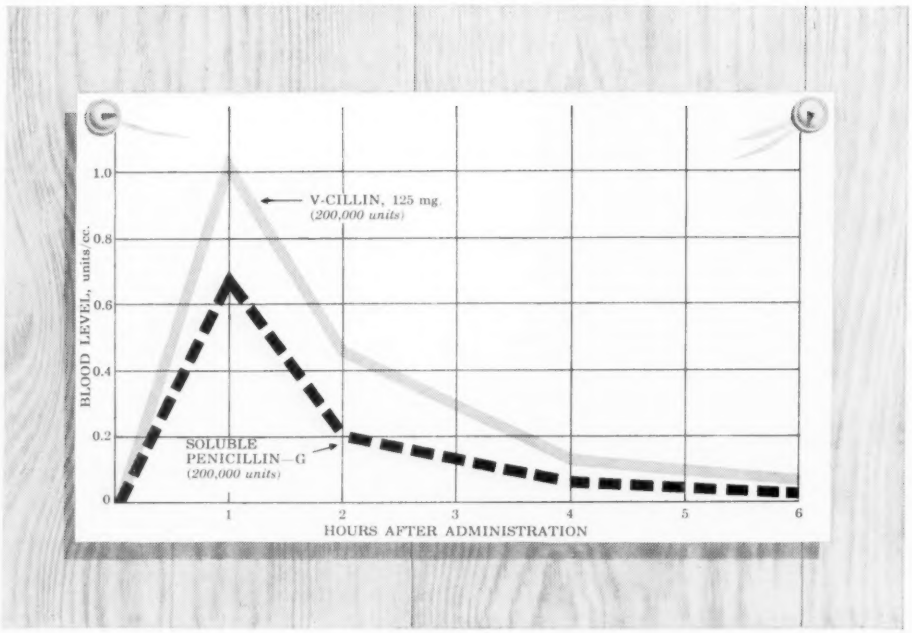

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INDUSTRIAL MEDICINE AND SURGERY
FEBRUARY, 1956

Experimental Carcinogenic Studies on Hydrogenated Coal Oils

I. BERGIUS OILS

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IN A PREVIOUS publication[1] the results of a bio-assay on carcinogenic properties of three fractions (heavy, medium and light oils) of synthetic hydrocarbon oils produced by the direct hydrogenation of coal through the application of high pressure and heat and the action of a metal catalyst (Bergius process) were reported. The three products used were manufactured in a pilot plant operation carried on by the Bureau of Mines, U. S. Department of the Interior, at Bruceton, Pennsylvania. Since some of the mice and rats receiving cutaneous applications or intramuscular injections, respectively, of these materials developed cancers of the skin or of the muscular and connective tissues, and in view of the fact that human evidence has developed concerning a carcinogenic hazard from some of these materials, a more thorough and complete investigation of the various Bergius coal hydrogenation products was indicated. In the present studies nine different fractions including products of different boiling points and physicochemical properties, ranging from pitch to finished gasoline were studied. The fractions were obtained in a large scale production process, operated until recently by the U. S. Bureau of Mines at its Synthetic Fuels Demonstration Plant at Louisiana, Missouri, and were furnished through the courtesy of Mr. J. A. Markovits.

Experimental Procedures

THE FOLLOWING fractions of Bergius coal hydrogenation products were tested:

(a) *Fraction 1.* Centrifugation Residue, Liquid Phase, is a highly viscous, black material which cannot be poured unless previously heated in boiling water.

(b) *Fraction 2.* Heavy Oil Let-down, Liquid Phase is a highly viscous, blackish oily liquid.

(c) *Fraction 3.* Light Oil Bottoms, Liquid Phase, is a viscous brown oil containing a scaly admixture.

(d) *Fraction 4.* Middle Oil, Liquid Phase, is a thin, reddish brown oil having an aromatic odor.

(f) *Fraction 5.* Cold Catchpot Product, Liquid Phase, is a rather thin, dark brown oil with an aromatic odor.

(g) *Fraction 6.* Cold Catchpot Product, Vapor Phase, is a thin brownish oil with an aromatic odor similar to gasoline.

(h) *Fraction 7.* Raw Gasoline, is a thin dark brown liquid which quickly evaporates leaving a brownish red oily residue.

(i) *Fraction 8.* Finished Gasoline is a thin, clear, golden colored liquid with a typical gasoline odor.

(k) *Fraction 9.* Pitch Flash Distillation Residue is a solid, black, coke-like material which, when extracted with benzol in a Soxhlet apparatus, yields a black, tarry viscous condensate. Chemical analyses of the various fractions were not available.

All fractions were tested for carcinogenicity by repeated application to the skin of mice and rabbits and by intramuscular injection into the thigh of rats. For cutaneous administration, the fractions were applied by dropper twice a week to the nape of the neck of mice and to various parts of the skin of rabbits. Fractions 2 to 8 were used as supplied. Fraction 1 was diluted with acetone at a ratio of 56.2 gm. of fraction 1 to 4.7 gm. of acetone. Fraction 1 thereby obtained a consistency permitting its administration to the skin by dropper. Fraction 9 was extracted with benzol. The tarry material obtained after evaporation of benzol was used.

For the testing of the various fractions by the cutaneous route, 25 male and 25 female mice of the C57 black strain about six weeks old, were used. Applications of the fractions were continued throughout life with the exception of those in which fraction 9 was used. These were discontinued for lack of material after about six months. The fractions were also applied to the skin of rabbits. Three-month old animals of the

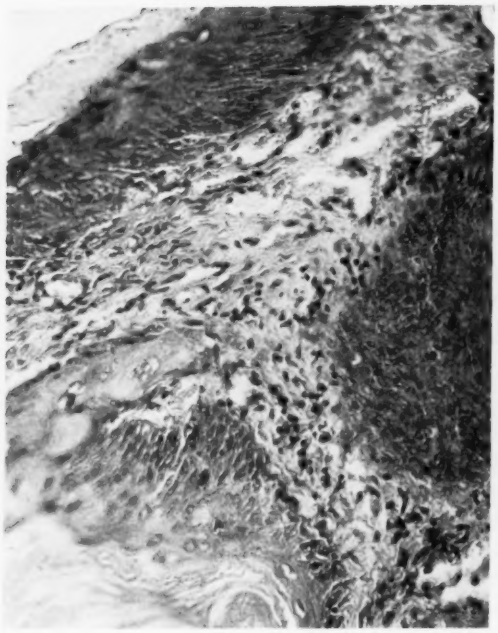

Fig. 1.
Filiform squamous cell papilloma of the skin of a mouse painted with centrifuge residue, fraction 1, showing ill-defined basal outlines of the pegs, and beginning infiltrative growth of squamous cells.

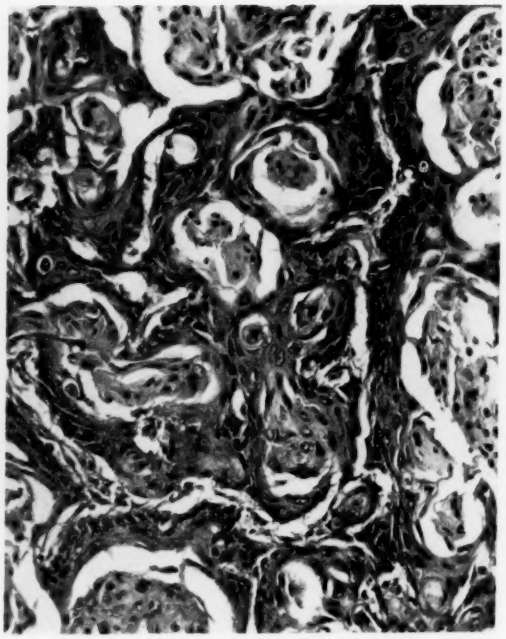

Fig. 2.
Warty squamous cell carcinoma with cornifications in the skin of a mouse painted with cold catchpot product, fraction 6.

Dutch strain were employed for this purpose. Each fraction was applied to the skin of 10 rabbits. However, several fractions (4 or 5) were applied to the same rabbit at different sites (dorsal surfaces of ears and of back). The sites used for each fraction in the various rabbits followed a predetermined scheme providing for proper rotation so that each fraction was tested on each type of site selected. As in the mice, the hair was clipped with scissors during the early part of the experiment before more or less permanent loss of hair appeared for most of the fractions. The applications were continued for a maximal period of 22 months, with the exception of those of fraction 9 which were stopped after about six months.

For the purpose of intramuscular administration, the fractions were diluted with tricaprylin at a ratio of 1.1 gm. of oil to 16.5 cc. of tricaprylin. The individual dose of this mixture was 0.3 cc. containing 0.02 gm. of oil. The injections were made into the right thigh of Wistar rats once a week for three successive weeks. This regimen was repeated after about six months for the rats surviving at that time. The rats were three months old at the start of the experiment. Ten rats were placed in each test series. However, 20 rats were used in testing fraction 3 which caused a rather high mortality during an early part of the experiment. The experiment was terminated after a total observation period of two years, when the surviving animals were sacrificed.

Two sets of Wistar rats, 30 in each test, served as controls. Thirty of them were injected with 0.1 cc. of a 2% gelatin solution in physiologic saline into the marrow cavity of the right femur, while the other 30 rats were injected with the

TABLE I.
DEATH DISTRIBUTION AMONG MICE AND RABBITS RECEIVING SKIN APPLICATIONS AND AMONG RATS BEING INTRAMUSCULARLY INJECTED WITH BERGIUS OILS

Fraction	Species	0.2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	20-24
1	C57	2	4	7	12	14	9	2				
2	Black	3	1	9	24	8	4					
3	Mice	6	2	9	21	9	1	3				
4		41	36	17	5	1						
5		6	1	3	13	15	7	5				
6		3	1	1	6	19	4	13	3			
7		5	0	20	4	3	7	2				
8		13	7	9	12	3	1	1	4			
9		8	20	12	10							
1-9	Dutch Rabbits											20
1	Wistar Rats			1	4		3				2	
2				2	5						3	
3				23	0	5		1			1	
4				2	7						1	
5				1	1	4				2	2	
6				1	6			1		1	1	
7				4	2	2		1	1		1	
8				3	2	2		1		1	1	
9				1	2	2		3		1		
Controls	Wistar Rats	1	5	2	1	3	21	4	6	3		14

same amount of gelatin solution through a hole drilled through the frontal bone into the nasal sinuses. Rats surviving for two years were sacrificed.

Postmortem examinations were performed on all animals used. Histologic examinations of the various tissues and organs were made in all cases in which any significant pathologic changes were found at necropsy (167 out of 500 mice; 50 out of 100 rats; 19 out of 20 rabbits).

Experimental Observations

THE PERTINENT observations made in this study are summarized in Tables I and II.

In addition to these tumors developing at the site of primary contact with the various fractions and apparently elicited by them, neoplastic reactions were observed also in other organs and tissues of all three species. One rabbit treated with fractions 5 to 9 showed extensive mononuclear leukemic infiltrations in the liver, abdominal lymph nodes, and pancreas. Leukemic or lymphomatous conditions were noted in one mouse treated with fraction 1, in two given fraction 3, and in 3 exposed to fraction 7. Large round cell sarcomas originating usually from the ileocecal lymph nodes, less often from retroperitoneal ones, were found in rats treated with several fractions: fractions 3, 4, 6, 7, 8 (three cases), and 9. Ovarian fibromas were found in one rat each of the series injected with fractions 1 and 9, while an ovarian adenocarcinoma was observed in a rat given fraction 3. A retroperitoneal fibrosarcoma was noted in a rat injected with fraction 7. A small squamous cell carcinoma of the lungs (Fig. 6) was found in a rat treated with fraction 9. In the 100 rats used a total of 13 tumors located distant from the oil deposits was noted, of which 11 were malignant. Among the 60 Wistar rats used as controls, four had round cell sarcomas of the abdominal lymph nodes, five exhibited spindle cell sarcomas of the liver of which one was definitely related to the presence of a parasitic infection and originated from the wall of the cyst. One of these rats had, moreover, a squamous cell papilloma of the fore stomach. An adenofibroma of the breast existed in another rat, making a

TABLE II.
BENIGN AND MALIGNANT TUMORS AT SITES OF PRIMARY CONTACT (SKIN AND TISSUES OF THIGH)

	Species					
	Mouse		Rabbit		Rat	Adenoma
Fraction	Pap.	Ca.	Pap.	Ca.	Sa.	Sebaceous gland
1	3	0	4	2	0	
2	1	0	5	3	0	
3	1	1	2	2	0	
4	1	2	2	3	0	
5	0	1	3	0	0	
6	0	1	0	0	1	
7	0	1	2	0	1	1
8	0	0	0	0	0	
9	0	4	0	0	0	
Total	6	10	18	10	2	1

The papillomas of the skin in mice and rabbits were usually broad based filiform projections of connective tissue covered by a stratified and cornified epithelium. The carcinomas were of the squamous cell variety. The sarcomas in rats were fibrosarcomas (Figs. 1-5).

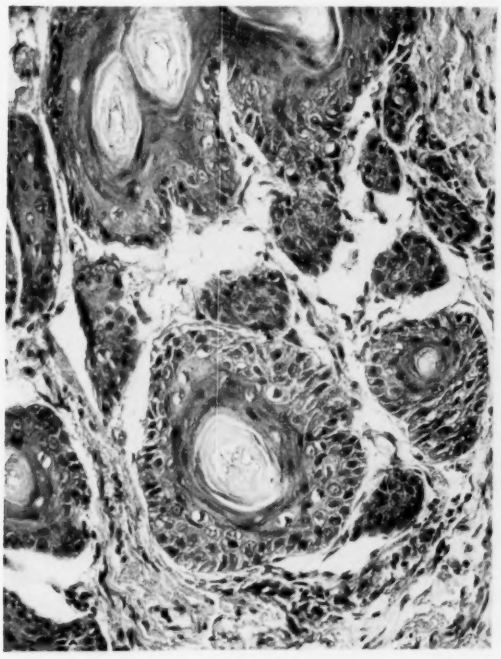

Fig. 3.
Squamous cell carcinoma in the skin of a rabbit painted with heavy oil letdown, fraction 2.

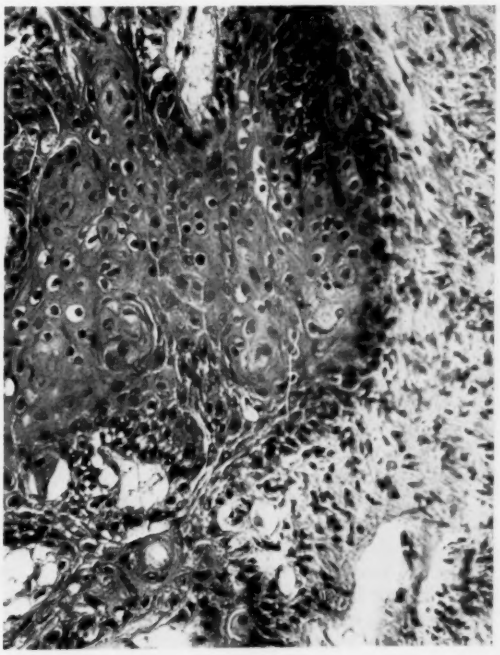

Fig. 4.
Diffuse and broad squamous cell carcinomatous coating of the skin of a rabbit painted with light oil bottoms, fraction 3.

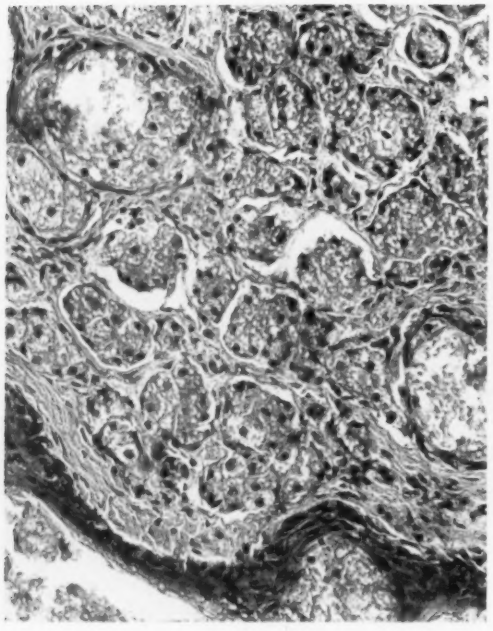

Fig. 5.
Sebaceous gland adenoma of the thigh of a rat injected intramuscularly in this area with raw gasoline, fraction 7.

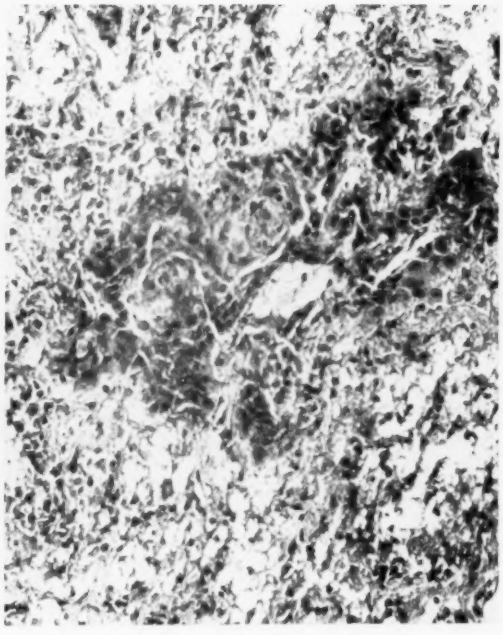

Fig. 6.
Small squamous cell carcinomatous focus in the lung of a rat intramuscularly injected with the benzol extract condensate of pitch flash distillate residue, fraction 9.

total of 11 tumors, of which nine were malignant. None of them developed at the site where gelatin was injected.

Comment

A COMPARISON of the incidence and variety of tumors found in these two groups of rats as well as observations previously reported[2,3] on the occurrence and frequency of "spontaneous" tumors in rats of the Wistar strain practically excludes the possibility that the tumors found in the test series remote from the site of deposition have any causal relation to the oils injected. Whether the leukemic reactions noted in one rabbit and six mice are causally related to the oils cutaneously applied is uncertain.

An analysis of the mortality data and the yield of benign and malignant neoplasms developing at the sites of primary contact, on the other hand, shows that with the exception of finished gasoline Bergius products possess carcinogenic properties for mice, rabbits and rats. Since none of the mice and only a few of the rats used survived, because of the high toxicity of the products, for a period equivalent to the normal life span of the two species, the evidence on hand reveals mainly neoplastic reactions which might be expected to occur during the early parts of the latent period.

This interpretation is at least in part suggested by the much higher yield of benign and malignant cutaneous tumors found in the rabbits. Consideration, however, must be given to the distinct possibility that rabbits may be more susceptible than mice and rats to the carcinogenic action of the oils tested, since observations to this effect have been reported in connection with the testing of various petroleum oils,[4,5] some of which proved to be carcinogenic in rabbits while not having such an effect in mice. The findings nevertheless indicate, if an attempt at a comparative assessment of the degree of carcinogenic potency of these Bergius products is made, that they are apparently of distinctly lower carcinogenic power than that possessed by common coke oven tar. In an experiment in which coke oven tar was applied to the skin of 50 C57 black mice twice a week, the first papillomas appeared after four months and all mice surviving for six to seven months exhibited well developed warty carcinomas. Special mention may be made of the fact that carcinogenic properties were present in rather low boiling fractions including impure gasoline, although there was evidently a gradual decrease of such qualities in the different products following the drop in their boiling points. These observations correspond to some previously made in connection with the testing of petroleum and coal tar fractions. Carcinogenic potency was demonstrated through the application of such materials to the skin of mice not only for high boiling fractions but also for some of the lower boiling range, such as methylated naphthalenes. The recently reported occurrence of skin cancers in man following occupational exposure to cutting oils and the successful experimental production of cutaneous carcinomas in mice painted with such oils, provide additional evidence indicating that hydro-

carbon products of a medium and low boiling range obtained from petroleum or coal tar or shale oil may contain carcinogenic factors.[7,8,9,10,11]

Conclusions

1. NINE different fractions covering the entire range of fractionation products obtained through the direct hydrogenation of coal by the Bergius process were tested for carcinogenic potency on mice, rabbits and rats by cutaneous and intramuscular administration. Eight of the nine fractions ranging from pitch to unfinished gasoline, elicited carcinomatous or sarcomatous lesions in one or all species and by one or both routes of exposure. The reported observations made on large-scale production samples confirm and extend those previously recorded on experimental products of the same type.

2. The degree of carcinogenic potency of the various fractions tested seemed to decrease in a general way with the decrease of the boiling point of the fraction.

3. There were distinct differences in carcinogenicity of the individual fractions for the three species tested, again providing evidence supporting the view that several species should be used for the screening of chemicals for carcinogenic properties.

4. In comparison to coke oven tar the various Bergius oil products exhibited a moderate to mild carcinogenic potency.

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"Best Producers"

HANDICAPPED workers help cut operating costs, improve plant-community relations, are called "best producers" by Leo Viner, Personnel Manager, Viner Brothers, Bangor, Maine, shoe manufacturing concern, which has employed handicapped workers for nearly 30 years. Of company's 380 employees, 30 are physically handicapped. Of these, 25 are deaf—four with severe impairments in addition. Typical employees include: A deaf girl who was chosen to demonstrate the company's new machines because of her unusual aptitude and capability. Operating a toe-lasting machine, she averages $45-$50 weekly on piece work. A badly-crippled ex-sailor averages $70-$80 weekly as a handsewer, wears "the widest grin in the plant," although five years ago he was considered a despondent "misfit" by the community. A deaf woman picked up stitching so fast she was made a trouble shooter and now supervises "normal" stitchers. Deaf workers are considered the best available recruits in the labor market by the personnel manager who yearly gets list of graduates of Maine School for the Deaf, which he combs for residents of Bangor area. Deaf workers are trained in pairs. Two years ago, the company set up a training program for handsewers, of whom 25 were severely handicapped. The city of Bangor furnished instructors; the company furnished quarters and material, and the Maine State Department of Rehabilitation helped set up training procedures.

—*Industrial Relations News*, January 14, 1956.

Causes of Deafness

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IF INDUSTRY is eventually to reimburse its employees for loss of hearing sustained as a result of industrial noise exposure, it might be profitable for it to examine other causes of deafness for which no liability should be assessed.

As may be noted in the accompanying tabulation, the causes of hearing loss are numerous. The audiogram will reveal hearing loss but the type and its cause are a complex problem only resolved by a skilled otologist after careful correlation of history and physical findings.

Deafness for convenience sake can be classified under four groupings. These are deafness due to either destruction or disturbance of the central sound reception areas in the brain, deafness due to cochlear nerve damage often termed perceptive deafness, deafness due to damage to the sound conduction mechanisms in the outer and middle ear, and, finally, a mixed type of deafness due to a combination of two of the previously noted types.

Central Nervous System Deafness

FOR SOUND to be heard, it must be recognized as such by the integrating mechanism of the brain. Lesions of the cortical hearing centers of the medulla may be caused by spontaneous vessel hemorrhage or ruptured aneurysmal hemorrhages and thromboses of the posterior inferior cerebellar artery. Such lesions, which cause auditory aphasia and vertigo, may be recognized by accompanying unilateral pupillary dilatation, vocal cord paralysis, and hemianesthesia of the face which are the more common features of a cerebrovascular accident.

A hysterical deafness may be termed an auditory aphasia because of the subconscious blocking of the pathways between the auditory center and the recognition centers which interpret sound reception.

An epileptic convulsion may be followed by a transient total deafness of central origin.

Nerve or Perceptive Deafness

DIRECT severance of the cochlear portion of the auditory nerve can occur as a result of a fracture through the petrous portion of the temporal bones of the skull. Such an injury with resultant hemorrhage into the inner ear may cause

OUTLINE OF CAUSES OF DEAFNESS

A. Central Nervous System Deafness:
- I. Brain hemorrhage—spontaneous:
  - (a) Arteriosclerotic—hypertensive.
  - (b) Aneurysmal.
- II. Hysterical or neurotic aphasia.
- III. Epilepsy.

B. Nerve or Perceptive Deafness:
- I. Trauma to skull, fracture of temporal bone.
- II. Electric shock.
- III. Caisson disease.
- IV. Toxic chemicals—alcohol, tobacco, quinine, salicylates, dihydrostreptomycin.
- V. Infection:
  - (a) Cerebrospinal meningitis.
  - (b) Mumps.
  - (c) Tuberculosis.
  - (d) Typhus fever.
  - (e) Scarlet fever.
- VI. Meniere's disease.
- VII. Allergic (Von Fankl-Hockwart syndrome)
- VIII. Acoustic neuroma.
- IX. Pulsations of carotid artery.
- X. Multiple sclerosis.
- XI. Rhesus factor sensitization.
- XII. Anemia.
- XIII. Periarteritis nodosa (Cogan's syndrome)
- XIV. Measles.
- XV. Congenital:
  - (a) Syphilis.
  - (b) German measles.
- XVI. Tetanus antitoxin.
- XVII. Presbycusis.
- XVIII. Noise.

C. Conductive Deafness:
- I. Otosclerosis.
- II. Tumors:
  - (a) Adenoids.
  - (b) Epitheliomata.
  - (c) Osteomata.
  - (d) Fungus growths.
  - (e) Non-chromaffin paraganglioma.
- III. Metabolic—calcium deficiency.
- IV. Infection—otitis media.
- V. Blast injury—tear of tensor tympani.
- VI. Foreign bodies.
- VII. Congenital.

D. Malingering and Neurosis.

a mixed deafness combining partial damage to the cochlear nerve and a conductive deafness of the middle ear. If such a fracture causes an incomplete severance of the nerve, the patient may complain of tinnitus and exhibit a diminution of perception of tones of the higher frequency levels. The Weber test will usually lateralize the vibrations to the healthier side. Electric shock and decompression deafness seen in caisson disease may be similar in signs and symptoms.

Numerous organic chemical materials, such as alcohol, tobacco, quinine, salicylates, dihydrostreptomycin, and possibly terramycin, have a tendency to injure the acoustic nerve and cause temporary or permanent nerve deafness. The onset of this type of deafness is usually preceded by tinnitus.

Complications of infection, such as that noted in the fourth week of cerebrospinal meningitis, the meningitis of mumps and tuberculosis, typhus fever and scarlet fever, may account for a unilateral or bilateral deafness which may be complete and permanent.

Meniere's disease and the allergic deafness described by Von Fankl and Hockwart may both account for degrees of neural deafness. The deafness of Meniere's disease is usually that of the lower tones. The deafness of the Von Fankl-Hockwart syndrome is usually preceded by aural pain and accompanied by facial paralysis with a rash and swelling about the ear.

Other pathologic conditions affecting the cochlear nerve are the acoustic neuromas, pulsations of the carotid artery, multiple sclerosis, rhesus factor sensitization, anemia and periarteritis nodosa or multiple inflammed lesions about the arteries of the ear. Oliner describes Cogan's syndrome of interstitial keratitis or eye inflammation and bilateral deafness in young adults, which has a rapid onset and is non-syphilitic in origin.

Measles in children may terminate in a progressive type of perceptive hearing loss. The residual signs of congenital or hereditary syphilis, which include deafness, are rarely observed in the past few years, but the congenital deformities and deafness which result from maternal German measles in the first trimester of pregnancy are occasionally noted.

A sudden deafness or persistent tinnitus is occasionally noted after a tetanus antitoxin administration. This may be accompanied by a generalized urticarial skin rash.

Presbycusis, or the nerve deafness that accompanies the aging process in man, cannot be differentiated from industrial noise deafness. It is apparently progressive in nature, with the greatest loss of hearing being at the higher frequencies with increasing age. Similar to industrial noise deafness, there is the characteristic 4096 cycle dip.

For completeness sake deafness due to prolonged exposure to noise levels above 90 decibels is included in this section. Such noise evidently causes a mechanical fatigue and finally destruction of the fibers of the organ of Corti located in the cochlea.

Conductive Deafness

CONDUCTIVE deafness with a normally appearing tympanic membrane is seen in otosclerosis. This condition which is often of a familial nature appears in the 16-30 year age group. The female sex is more affected than the male. These individuals complain of a tinnitus and state that they hear best in a noisy environment. Air conduction of sound may be lost to them but their bone conduction is normal to increased.

Tumors and adenoidal hypertrophy of the nasopharynx block the orifice of the Eustachian tube and cause degrees of deafness. The external auditory canal may be the site of epitheliomata, osteomata, fungus growths, and may harbor foreign bodies, such as wax, water or eczematous discharges, all of which will cause degrees of deafness. A chronically draining, highly vascular polypoid mass in the external canal accompanied by the symptoms of buzzing and roaring in the ears may disclose a deafness producing non-chromaffin paraganglioma.

A clonic, contracting tensor tympani accompanied by a fluttering type of deafness may be caused by a calcium deficiency.

Antibiotics under certain conditions may be responsible for diminution of sound perception.

Whether there will be an increased incidence of deafness in children following the antibiotic treatment alone, as opposed to the antibiotics plus prompt myringotomy in acute otitis media, awaits to be seen. Rarely do pediatricians do a myringotomy with antibiotic therapy in acute otitis media when there is a rapid subsidence of swelling, pain, and temperature. Otologists contend that deafness will ensue when there is retention of the incompletely resolved effusions that accompany or follow an otitis. In a chronic middle ear infection there will usually be an unhealed or perforated drum with chronic drainage. Individuals with a chronic middle ear infection will exhibit a greater loss for the lower tones in air conduction and a normal bone conduction both of which are differentiating signs from deafness due to industrial noise.

A sudden blast explosion or loud noise will cause a tearing of tympanic membrane which will result in a temporary low-tone deafness. A recovery, if it is to be expected, usually occurs within two months. If there is no recovery a permanent high-tone deafness will be noted.

Neurosis and Malingering in Deafness

THE NEUROTIC malingerer will always be a challenge to those doing ear examinations. Neurotic or hysterical deafness was noted as an auditory aphasia in the paragraph on central nervous system deafness. Many neurotics do not complain of tinnitus, which is a premonitory symptom of approaching deafness. The neurotic may state that loud noises cause annoyance or pain. The results of labyrinth testing are usually normal in these individuals, and sodium amytal narcosis may reveal the reasons behind the complaint. Audiograms will not be consistent and will be saucer-shaped with rises at both ends.

The malingerer will often feign unilateral deafness. He may deny transmission of tuning fork sound to either ear. He will also have a normal response to labyrinth tests. The reversed stethoscope tests may prove of value in these cases.

Summary

THIS brief outline of the causes of deafness is made in an effort to encourage industry which has a potential noise hazard, to survey its plants. If noise areas are found, corrective engineering measures should be taken to eliminate the noise at its source. If these measures are impractical, protective equipment should be used by employees working in these areas.

New employees should be examined by audiometer study prior to being hired for work in noise areas and prior to being transferred into noise areas. An employee with defective hearing should be subjected to medical examination. He may have a type of deafness that would be aggravated by further noise exposure.

(700 Main Street.)

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The Cancer Patient

I WOULD like to note that the causes of the cancers about which we know most were discovered largely by the practicing physician, the dermatologist, the surgeon, the pathologist, practitioners who were seeing patients. I firmly believe that if the practicing physicians of this country were to concentrate on this particular problem and try to do a thorough piece of investigation, the number of known causes of cancer would increase rapidly. It is the general practitioner who first sees the cancer patient. He often knows the patient well. He often possesses knowledge of where and under what conditions the person has worked, and to what possible carcinogens he has been exposed. It would be well worth while if the practitioners of this country, who individually do not see too many cancers in a year's time, would devote themselves to trying to determine what might have been predisposing factors in causation of cancers in the patients they see in consultation.

—From "Multiple Views on the Causation of Cancer," by HAROLD L. STEWART, in *Bulletin, New York Academy of Medicine*, October, 1955.

III Congreso Americano de Medicina del Trabajo

CARACAS, VENEZUELA
November 13-20, 1955

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ON OCTOBER 11 Delta Airlines' DC7 took off from Chicago's Midway Airport headed for New Orleans, Cuba, Jamaica, and Caracas, Venezuela, carrying two delegates from the United States who also, by special assignment, represented the Journal of *Industrial Medicine and Surgery*. This Third American Congress on Occupational Medicine was called by the parent organization, the Union Americano de Medicina del Trabajo, and offered a week's program with the backing and cooperation of the Ministerio del Trabajo, the Ministerio de Sanidad, the Instituto Nacional de los Seguros Sociales, the Instituto Nacional de Nutricion, and many other important organizations in South America. The III Congreso was headed by Prof. Dr. Jose Pedro Reggi, Director General of the parent organization, and Dr. Jesus Yerena, Presidente of the III Congreso itself, with Dr. Aleyandro J. Rhode, serving as Secretario General.

We were met at the Caracas airport by a polite young man wearing the blue, yellow and red badge of the Congress with the title "Protocol." This was the beginning of our introduction to a full course in protocol, which is a unique experience for an American. Our taxi traveled over the superbly engineered new highway from the airport, which is directly on the coast at the foot of the mountains, to Caracas, which is up in the valley, deep in the quite high mountains. The expressway dove through two tunnels cut directly through mountain rock, one of them a mile long, lighted and designed on a par with the Holland Tunnel. In 30 minutes we found ourselves at the famous new streamlined Tamanaco Hotel, located part way up the side of a mountain facing over the city of Caracas and the long valley in which it lies. Our rooms looked down on a beautiful pool, gay sun chairs, and bright lawns, and out over the whole city into the cloud-draped mountains on both sides of the valley.

The two delegates—Dr. Hedwig S. Kuhn and Dr. Hugh A. Kuhn.

The Americans attending this Congress were, Dr. and Mrs. Logan Robertson, of Asheville, North Carolina; Dr. Ralph Schneider, Standard Oil (New Jersey); Dr. W. E. Wakeley, Jr., Standard Oil (New Jersey); Dr. B. E. Bennison, Esso of New Jersey; Dr. M. L. Amdur, of Buffalo; Dr. Russell Carroll, of Esso Oil based in Aruba; Eugene Tryce, an engineer with Point-Four Program based in Colombo; William A. McQuary, an engineer with USA International Cooperation Administration, based in Caracas; Capt. Harry C. Oard, (MC) USN, based with U.S. Naval Mission in Lima, Peru, and ourselves. Interesting people, and doing a very capable job, were the three interpreters: Carlos M. Jané, a Spaniard living in Montreal, who translated English to Spanish; Mrs. Delores Dove, of New York, who translated Spanish to English; and Mary Coram, of Washington, D.C., who translated English into Portuguese and Portuguese into English. We all, of course, used the simultaneous translation equipment of earphones.

The session opened with considerable formality, Sunday, November 13, in one of the beautiful modern auditoriums of the University City. Ciudad Universitaria (as it is called) is, incidentally, a tremendous institution. Because of the possibility of earthquakes in Venezuela, everything is made of heavily reinforced concrete, very modern in design, using bright colors, and all in good taste and functionally perfect so far

The meeting was opened by the Minister of Work, Dr. Carlos Tinoco Rodil.

as acoustics, arrangement, equipment and attractiveness are concerned. The Minister of Work (we would call him Minister or Secretary of Labor), Dr. Carlos Tinoco Rodil, opened the session, which was short but impressive—the flags of the nations set against panel wood behind the speakers' table. An enormous staff of press photographers kept flashing pictures throughout. We adjourned for the day after this inaugural session, to stroll through the university, and return to the hotel by chartered buses. Later a cocktail party was given by the Creole Petroleum Company in the unique setting of an attractive Doctors' Club complete with out-door patio, swimming pool, soft lights, tables, good liquor, hors d'oeuvres, and good company.

THE PROGRAM for the week included six "official" papers, a number of so-called "conferences" (informal sessions without benefit of interpreters), guest-of-honor papers, informal and formal entertainment, and field visits. The official papers were given by Dr. Jose Pedro Reggi, on "Medico-Social Problems in Rural Areas"; by Dr. Rafael Risquez I., on "The Health Problems of the Petroleum Industry"; by Dr. Fernando Boccolini, of Brazil, on "Rehabilitation Problems"; by Dr. H. S. Kuhn, on "Vision in Industry"; by Dr. Rafael Penalver, on "Manganese Toxicology."

The guest-of-honor papers were given by Prof. Alfonso de la Fuente Chaos, who discussed "Medicine and Social Security"; Prof. E. W. Baader, of Germany, who discussed "Manganese"; Dr. Jose Yerena, "Work Accidents and Social Security"; and Dr. Warner Ehrhardt, of Germany, also on "Manganese."

Then there was an evening session, more on the informal side, during which Dr. Logan Robertson presented the color slides of his Mobile Industrial Health Unit. This concept of industrial medicine had tremendous appeal and obvious application. A most enthusiastic session gathered to hear Dr. Hugh A. Kuhn present a sound film, slides, and a discussion on "Acoustic Trauma." This was attended, not only by the Congress members, but also by the ear, nose and throat doctors of Caracas and several near-by Venezuelan cities.

The second day of the week we were driven in buses, with motorcycle escort, to the airport (the entire Congress of over 150 people), and were flown to the Shell Refinery at Cardon, not far from Maracaibo where the "black gold" of Venezuela is pumped up from under the huge lake, and brought by pipe line to several refineries of which Shell is a very large one. Arriving at Cardon, which was really tropically hot, the Shell Petroleum people met us in buses to start a well organized day. After being briefed by Superintendent W. F. C. Mackie and Medical Director Dr. Manuel Rodriquez Navarro, we were taken through the entire refinery by bus with full explanation given by guides in each bus, all of them top management. The Medical Director told us that they had had a tremendous campaign for a reduction of accidents—which had gone down in number from 815 in 1951 to 435 in 1955. Public and industrial relations were good, with no intoxication in five years (which seemed to be very impressive in their minds)! They had all the services: prenatal, babies born in the hospital, pediatrician, pre-school physical, sanitation, nutrition and food preparation, and a dentist. Their doctors had a starting salary of $600 a month and maintenance, which is a furnished house, electricity and water, stove, and refrigerator. The Senior Staff have a three-bedroom house, the Junior Staff a duplex. After going through the refinery, we went to the Country Club for cocktails. This social event always is a pleasant and a lengthy one, everyone talking with the utmost animation, but always standing. We were told again, what we already knew, that if one is really going to understand and participate in any of the South American countries' functions, one must be able to stand and talk by the hour, this being quite an accomplishment for

Americans who sit for everything they do. The cocktail hour was followed by a delicious buffet lunch, and then we were driven back to the airport to our chartered planes, and flown back to Caracas in the late afternoon.

One of the interesting "musts" was our visit to the Panteon Nacional where we officially laid flowers on the tomb of the Liberator Bolivar. Then, too, there was a visit to the rehabilitation centers at the seashore, and a luncheon at the Instituto Nacional de Nutricion, where we were served typical Venezuelan foods and wines.

The President of Venezuela, General Marcos Perez Jimenez, greeting Dr. Hugh A. Kuhn, representing the United States delegation.

IT IS difficult to report the content of the papers given, not because of language difficulties, but because, actually, the South American concept of industrial medicine is focused in almost its entirety on social security, compensation, government functions in the field of workers' health, nutrition, insurance services, etc. With the exception of the German doctors and ourselves, I can say honestly that Dr. Robertson's, my husband's, and my own papers were the only truly medical papers given to this group, i.e., papers with real medical content.

Dr. Rafael Risquez I., Medical Director of the Creole Cooperation, who discussed a study of health conditions in the petroleum industry, told us some interesting details. They surveyed the physical findings in 1954 of over 13,000 workers, using IBM cards, and studying over 2000 cases in detail. The studies were all voluntary, and on a confidential basis, including people from 25 to 35 year age groups. The study took two hours per man, not counting laboratory and x-ray. Only 8% of their workers did not live with a family. Sanitary conditions of the mother and the family were studied, finding adequate water in the house, and sanitation, including the degree of crowding. Sixty percent of the workers have good bath water and sanitation, with adequate recreation. The nutrition study was most interesting, showing that an increase in salary did not improve the nutrition, with .2% of the workers having a deficiency diet in the high income group. An improvement in nutrition needs not only education as to what to eat, but also to make what they need to eat available in local markets. There seems to be a vitamin deficiency in fruits and vegetables. They noticed one peculiar thing: there were a great many cases of mumps in the petroleum industry; no one knew why. While the doctor presenting this paper did not draw any conclusion, it seemed to us, and to Medical Directors of the petroleum industry, that it showed pretty conclusively that the petroleum workers' environment and work were healthy ones.

Left to right: Carlos Jane, interpreter, English to Spanish; Mary Coram, interpreter, English to Portuguese; Dr. Hugh Kuhn; Dr. Hedwig Kuhn; Dr. Silvestre E. Rincon, Maracaibo, Venezuela; Russell Carroll, Aruba; W. E. Wakeley, Standard Oil (New Jersey); Delores Dove, interpreter, Spanish to English; B. E. Bennison, Esso Standard Oil.

Frankly, we were shocked at the socio-economic emphasis, and considerably troubled, feeling that there were many doctors present who would like to have had more basic industrial medicine—facts that they could use in the administration of medical programs in large and small industries. There were some who felt that there might be developed a separate organization for industrial medicine *per se*. Many South American industrial physicians did not know the true set-up of *our* Industrial Medical Association, thinking we were a part of our government and/or worked under the auspices of other groups. They were surprised and delighted to find that the Industrial Medical Association was an independent organization of doctors, and they also were delighted to find that they could, as individuals, be members of the Industrial Medical Association, and that it was not limited to United States doctors, already having members from other nations.

IT IS RECOGNIZED, of course, that all of the South American nations have a totally different concept in government from the one we have; that there are dictatorships that might be bad, and dictatorships that are very good. But, nevertheless, the government controlled the economics of each country, and, in considerable measure, therefore, the lives of their doctors—what they did and how they did it. This, in Venezuela, did bring large sums of money to the university and research institutions, and it did bring a measure of medicine to the thinly settled rural interior areas that might not otherwise have been possible. It seemed to us, as well as to the other American delegates, that an increased effort on the part of the IMA might bring individual doctors, doing industrial medicine in the South American countries, into the activities of our organization. We tried to extend the interest and hospitality of our group and its officers and individual members to each and every South American doctor we met.

Adding to our own worthwhile experiences during this week were Dr. Alfonso Bortone, Medical Director of Creole Cooperation in Caracas; Dr. Diego A. Blanco, Medical Director of the Iron Mines Company of Venezuela (Bethlehem Steel), located in the Southern part of Venezuela near the Orinoco River, and their Industrial Relations Director, Henry Ristorcelli. These folks really put themselves out to tell us of the work of Bethlehem Steel at the surface mines, river ports, and ocean reloading ports. We spent a delightful evening with Mr. and Mrs. Frank Storms, top Bethlehem Steel engineer in Caracas. Incidentally, engineers are called doctors in South America. Dr. Storms is one American who really understands the sensitiveness and complexity of our South-of-the-Border friends.

ON OUR return flight we stopped off in Panama City to see Dr. and Mrs. James Townsend. Dr. Townsend is now Chief of the Field Party Operations Mission in Panama, and has done a magnificent job, one that his many, many friends of the Industrial Medical Association should know about in detail. Among other things, Dr. Townsend told us that when he got to Panama, no one knew anything as to what the problems were that existed; to what extent they existed; and what could or could not be done about them. Tuberculosis was and is a serious problem. When he arrived there, they had no beds, and there were 35 deaths per 100,000 people. He set up a program in which 390,000 people were skin tested, 200 vaccinated, and a mass x-ray program started in which the government gave the mobile unit, x-ray technician and chauffeur, and where 75,000 people had been x-rayed by May of '54. Much laboratory work and streptomycin were administered by a large and successful outpatient department. Follow-up work by nurses was organized, and local hospitals now x-ray all admissions except emergencies, so that 75 cases a day are processed, and 400 to 5000 are filmed each month. The government is expected to take over this project by '57, as it has already taken over the skin testing program. This is the way the Point-Four Programs operate.

Dr. Townsend also organized a sanitary engineering section run by three Panama engineers who were trained in the States on scholarships with the understanding that they be given a job on their return. There also has been organized training in garbage disposal, water supply, sewage, elimination of flies, and helping the local government reorganize its own sanitary department in health education. Here, a man was sent to Ann Arbor for training, and then turned over to the government, working with the schools, PTA's, and using many of our educational poster techniques. Some nurses are concentrating on nursing-school situation, one of them teaching in the school, and one bringing up the standards of the mental health hospitals. There are social welfare workers who tie in with the Minister of Health and the Minister of Social Welfare and Labor on hospital administration, supplies, records, and business administration. The idea of the whole plan is to anticipate government financial support being increased and U.S. support being decreased. Dr. Townsend's office works closely with WHO Headquarters in Guatemala with special reference to rural problems, as good roads are almost non-existent in Guatemala.

It is our hope that Dr. Townsend will be invited soon by the IMA, not only to visit with old friends—whom he misses very much, and who miss him very much—but also to tell us of his truly unique and important work.

(112 Rimbach Street.)

Rehabilitation Under Workmen's Compensation in California

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WITH THE recent advances in the techniques and methods of rehabilitation, the need to make rehabilitation an integral part of a complete system of workmen's compensation has become increasingly compelling. Financial compensation for an injury incurred on the job can no longer be considered a sufficient objective.

The case for the integration of rehabilitation into workmen's compensation has been stated unequivocally by the Under Secretary of Labor, Arthur Larson: "It is too obvious for argument that rehabilitation. . . . is the most satisfactory disposition of industrial injury cases, from the point of view of the insurer, the employer, and the public, as well as of the claimant. . . . It is probably no exaggeration to say that in this field lies the greatest single opportunity for significant improvement in the benefits afforded by the workmen's compensation system."[1]

The official statements of international committees of workmen's compensation administrators emphasize repeatedly the necessity to regard rehabilitation as a major part of the compensation process[2]; the American College of Surgeons advises that rehabilitation should be "the basic concept in an improved workmen's compensation system"[3]; a UAW-CIO consultant calls rehabilitation "the most promising prospect in workmen's compensation"[4]; a noted legal authority writes that rehabilitation is "the most needed and at the same time the most promising improvement" in workmen's compensation.[5] Nevertheless, rehabilitation is not a part of workmen's compensation in many states, and existing rehabilitation services and facilities are generally not well coordinated with workmen's compensation. Furthermore, it is widely contended that inherent in the workmen's compensation systems of the various states are legal provisions and administrative practices which tend to form effective institutionalized obstacles to rehabilitation.

It is the purpose of this article to analyze the arrangements now in effect in one jurisdiction, California, for restoring the industrially injured to a productive life, with a view to pointing up the changes which need to be made in present attitudes, laws, and administration if the potential benefits of rehabilitation are to be made available to injured workers under workmen's compensation.

Rehabilitation Activities in California

REHABILITATION means the restoration of a handicapped person to the fullest physical, mental, social, vocational, and economic usefulness of which he is capable. Rehabilitation services for injured workers in California fall into two categories, vocational rehabilitation and physical rehabilitation, each with its distinct institutional and legal framework.

Vocational rehabilitation consists of training a handicapped person in a vocational skill so as to render him employable. California law does not make vocational rehabilitation benefits a part of its workmen's compensation system.[6] Those California workers who receive vocational rehabilitation services obtain them through the Bureau of Vocational Rehabilitation, an agency of the State Department of Education, financed by both state and Federal funds. The official contact between the Bureau and the Industrial Accident Commission is limited to two major functions; the Bureau advises the Commission, upon the Commission's request, regarding the disposal of cases through lump-sum settlements, and the Commission refers to the Bureau 200 to 300 industrial accident cases monthly which are deemed able to profit from vocational rehabilitation.[7]

The Bureau of Vocational Rehabilitation was set up to provide rehabilitation services to persons having a physical or mental disability amounting to a vocational handicap. New legislation passed in 1943 (Public Law 113, 78th Congress) expanded services of the Bureau from the originally limited provision of vocational counseling and training, provision of prosthetic appliances, and placement, to include maintenance and transportation, tools, equipment and licenses, medical, surgical, psychiatric, and hospital service.

Medical and vocational diagnosis, guidance, training, and placement are services rendered regardless of the client's financial situation; to the extent that he is able, the client is expected to pay for all other services. Medical treatment and physical rehabilitation services are not made

available by the Bureau to industrial accident cases; these are considered to be the responsibility of the employer. Since the number of persons in the state needing rehabilitation far exceeds the number who can be served by the Bureau,[8] a series of priority factors has been developed, on the basis of which selection of clients is made. These are listed in the Bureau's "Manual of Policies" as follows:

"1. Those applicants most clearly in need of rehabilitation services will be given first preference. 'Need' here is to be broadly defined in terms of severity of disability, extent of vocational handicap, as well as financial problems.

"2. Those cases most clearly representing a social and economic liability are to be given preference. Included in this category will be all types of public assistance cases for whose rehabilitation we have a strong obligation.

"3. The industrially injured will be given preference, since we have a legal mandate in this regard.

"4. Clients with dependents will be given preference over single persons provided they meet the criteria above.[9]"

The number of compensation cases receiving service from the Bureau in May, 1955, was 430, which was 8.3% of the Bureau's current total case load. The Bureau reports that in 1954 it classified 124 compensation cases as rehabilitated.[10]

Referral of injured workers to the Bureau for vocational training may be from one of a number of sources: friend, prospective or former employer, employment agency, an insurance claims agent (rarely), or the Industrial Accident Commission. Less than one-third of all compensation cases served by the Bureau are referred by the Commission. These are selected by two clerks, on the basis of first reports of injury and reports of disability ratings.

Distinct from the matter of vocational rehabilitation is physical rehabilitation, which emphasizes attention to bodily needs and ranges from "convalescent medicine," or hardening for the return to work, to the complex therapies and training required to restore a paraplegic to self-help and vocational opportunity.[11] It differs from definitive medical care in that the focus of the latter is on the healing of the wound and saving of tissue, while physical rehabilitation is concerned with the restoration of function of the body or one or more of its parts.

Physical rehabilitation of injured workers in California is in an entirely different setting from vocational rehabilitation in that physical restoration services are provided for in the compensation law, as part of the unlimited benefits which are the responsibility of the employer. Although there seems to be some confusion about this fact, possibly because the word "rehabilitation" is used with reference to both physical restoration and vocational retraining, it is clear that the courts and the Commission have consistently interpreted the "cure or relieve" provision of Section 4600 of the Labor Code[12] to include physical rehabilitation where medically indicated. The decision as to whether rehabilitation is medically indicated is made, generally, by the claims men in the various insurance companies, sometimes in consultation with the carriers' doctors.

Because physical rehabilitation services are not provided or supervised by any one agency or institution, a comprehensive description of activities in this field is not readily obtainable. Marshall Dawson, of the New York Department of Labor, in surveying the California situation, found a pervasive lack of knowledge of what actually happens to injured workers. He writes: "Administrators comment that they have knowledge only of the 10% of the cases that are in controversy. In 1952 there were 18,093 'original filings' of applications for hearings on claims, but only a small proportion of these are cases with which the Industrial Accident Commission or any other agency of the Department of Industrial Relations comes in contact."[14]

The problem is described by an officer of the Industrial Accident Commission: "We do not know what goes on in the vast majority of cases. The Commission simply has to assume that the insurance companies or employers are providing what the man is entitled to under the law. In the vast majority of cases when the man is injured the employer or insurance company would proceed to pay the disability indemnity payment and render medical treatment. And then, in the usual case, when the doctor—who would ordinarily be the doctor chosen by the insurance company or employer—indicates that the man is ready to go back to work, and the man does go back to work, that would end the matter."[15]

Some information regarding physical rehabilitation services to injured workers has, however, been obtained from representatives of some of the carriers and from several of the institutions engaged in rehabilitation activities. There are three facilities in California which can be classified as rehabilitation centers *per se*: May T. Morrison Center in San Francisco, California Rehabilitation Center in Santa Monica, and California Rehabilitation Center in Vallejo. In June, 1955, 27 industrially injured California workers were being treated at the Morrison Center, and none at the California Rehabilitation Center in Santa Monica. Six California injured workers were being treated at the Vallejo Center (then known as the Kaiser Foundation Rehabilitation Center) in November, 1953.[16]

Some physical rehabilitation services are also provided in physiotherapy centers; one such center, the largest in Southern California, with several branches in the Los Angeles area, treats approximately 70 injured workers every month.[17] Insurance companies report sending some of their patients who are veterans to Veterans Administration hospitals (these are reimbursed by the insurance companies for services provided), particularly the Long Beach Veterans Hospital. In addition the Palo Alto Clinic and several general hospitals, such as the Orthopedic Hospital in Los Angeles and Mount Zion in San Francisco,

provide some rehabilitation facilities, but these serve only a small number of injured workers.

Findings of Senate Committees

AN APPRAISAL of the adequacy of the rehabilitation services rendered to California injured workers has been made over the past several years by two Interim Committees of the California Senate: the Committee on Workmen's Compensation Benefits, and the Committee on the Education and Rehabilitation of Handicapped Children and Adults. Transcripts of hearings before these Interim Committees attest to an almost incredible confusion on the part of most witnesses as to what rehabilitation consists of. Testimony veers back and forth between the subjects of vocational and physical rehabilitation, without a discernible recognition of the fact that the institutional and legal framework surrounding the provision of vocational rehabilitation services is entirely separate and different from that in which the provision of physical rehabilitation is set.

In the reported findings of the Committees, during the past five years, physical rehabilitation is singled out for attention only once: the 1951 Report of the Interim Committee on Workmen's Compensation Benefits states that the existing program for physical restoration of injured workers "meets the requirements in that great majority of cases where recovery enables the workers to return to their former jobs and perform to 100% of their original capacity."[18]

The remainder of the Committees' recent findings and all of their recommendations deal with vocational rehabilitation, which is found to be generally inadequate.

In the 1953 report of the Committee on Workmen's Compensation Benefits, there is testimony that the adjustment of the industrially injured is being retarded and a burden is being placed on relief agencies because of the inability of the Bureau of Vocational Rehabilitation to provide sufficient services. Mr. F. E. Hart, Assistant Chief of the Bureau, testified that he had been told by the Industrial Accident Commission that the Commission could refer to the Bureau, if the latter had sufficient staff, 20,000 cases a year which could benefit from vocational rehabilitation. It was recommended that the Bureau receive a legislative mandate to give high priority to the industrially disabled.[19]

The Senate Committee on the Education and Rehabilitation of Handicapped Children and Adults, reporting in 1955, cites figures to show that the Bureau is not meeting the need for vocational rehabilitation for injured workers. During 1953, a year in the course of which the Bureau rehabilitated 100 industrially injured,[20] there occurred 142,715 disabling work injuries. These included: 1,715 amputations; 2,181 crushing injuries; 1,245 injuries to both eyes; 5,320 disabilities resulting from industrial disease.[21]

The Committee points to the lack of funds as the primary cause of inadequacy and recommends that additional funds be raised through an increase in the amount of money paid by insurance companies to the state in lieu of taxes, for use by the Bureau in industrial accident cases.[22]

Thus, the Senate Committees have apparently concluded that arrangements for physical rehabilitation of injured workers are satisfactory, and that vocational rehabilitation should be improved by increasing the money available to the Bureau of Vocational Rehabilitation.

There is ample reason to believe, however, that those who are looking toward a substantial improvement of the California workmen's compensation system through a greater emphasis on rehabilitation must adopt a different approach from that followed by the Senate Committees, and look into basic concepts of the nature of modern rehabilitation and the type of legal and administrative framework within which it can successfully operate. A reappraisal in this context indicates that present arrangements for rehabilitation are not adequate and currently contemplated improvements are not sufficiently far-reaching; further, it leads to the following positive conclusions:

1. Rehabilitation must be provided in an integrated fashion, encompassing both physical restoration and vocational training.
2. Comprehensive facilities for the provision of rehabilitation services need to be increased.
3. Basic changes must be made in law and administration with reference to (a) the benefit system; (b) emphasis on litigation; (c) supervision of medical care; and (d) arrangements for referral.

Rehabilitation as an Integrated Whole

REHABILITATION of injured workers will become a successfully functioning part of workmen's compensation only after the fragmented approach of the past has been discarded. Present knowledge of what makes rehabilitation successful indicates that the need cannot be met entirely through the appropriation of more funds to improve one or another segment of rehabilitation services. The 1955 session of the California legislature voted a special appropriation of $25,000 (to be matched by a like amount of Federal funds under Public Law 565) to the Bureau of Vocational Rehabilitation, to be used for a study and pilot program in the rehabilitation of injured workers. While it is certainly true that these services are needed, it is also true that by channeling available funds in this one direction only, the schism between what should be two parts of a single whole is being widened. According to the report of the Rehabilitation Committee of the International Association of Industrial Accident Boards and Commissions, "Under the new rehabilitation concept, the word 'vocational' should be omitted, because vocational service is but one aspect of rehabilitation."[23] The report goes on to say that no program should be limited, in name or in fact, to vocational training; it is much better to fit a workman for return to his old job through physical rehabilitation than it is to concede too readily that this cannot be done and to embark, therefore, on a program of vocational training

for a different job. The report also notes that a much larger proportion of injured workers need postoperative physical restoration than need "vocational" rehabilitation.[24]

The problem cannot be met except through a total approach. As Dr. D. J. Galbraith, former Vice-Chairman of the Ontario Workmen's Compensation Board states, "The old idea of exposing the injured individual to first aid, then medical and surgical care and, at the conclusion of such treatment, weeks, months, or years after the accident, turning him over to a new group of individuals who shall then undertake to place him satisfactorily in industry is becoming archaic. It should not even be seriously considered at the present time."[25]

Need for Comprehensive Rehabilitation Facilities

WHAT IS NEEDED, then, is an expansion and coordination of rehabilitation activities. Facilities must be provided and appropriate personnel trained. An integrated, full-day program can best be conducted in a comprehensive rehabilitation center, an institution designed to bring together the medical, vocational, psychological, and social services needed to achieve the maximum rehabilitation of the injured person. The tools of the various specialists who contribute to the rehabilitation effort are thus concentrated in one agency; there is an ease of consultation between all members of the professional team which results in the flexibility necessary for a fully effective program. It is in this setting that the program of the Bureau of Vocational Rehabilitation would be most effective. Members of the Bureau staff would be part of the team; vocational training activities would constitute part of the patient's well-rounded program at the center.

As indicated previously, there are now three rehabilitation centers in California which offer a fairly comprehensive program. None, however, incorporates a complete program for the training of rehabilitation personnel—an important omission in view of the great need for technically skilled persons in this field.

There are those who feel strongly that rehabilitation of injured workers is best conducted in centers serving the industrially injured alone; others favor a community center with a wing set aside for injured workers; many see no reason to separate the industrially handicapped from other disabled persons. The responsibility for the operation of a rehabilitation center can be the Commission's, the carriers', or the community's. Centers now operating in California and the one contemplated in connection with the Medical School at the University of California, Los Angeles, are examples of community centers. Specialized rehabilitation centers are sponsored by the workmen's compensation administrations or labor departments in Washington, Oregon, and Rhode Island. Insurance companies have established centers for the industrially injured in Massachusetts, Illinois, and Wisconsin.

Which of these alternatives is chosen by California as it expands its facilities is a secondary issue. The primary need is for recognition of the necessity to increase the facilities available to injured workers so as to accommodate the demands of a full-scale rehabilitation program. At the same time, however, the temptation to attribute much of the failure of rehabilitation efforts in California to the lack of adequate facilities should be resisted in view of the fact that none of the rehabilitation centers now operating in California reports a demand for its services which it is unable to satisfy.[26] There is no doubt that improved facilities will be a major asset, that present trends to increase facilities should be encouraged,[27] and that new centers will be urgently needed if rehabilitation is given its proper place in the workmen's compensation system, for then the demand for the services of rehabilitation centers would be enormously increased.

Need for a Rehabilitation-Oriented System

IF REHABILITATION—in the broad sense outlined above—is to be realized as an objective of workmen's compensation, modifications must be made within the compensation system itself. An effective rehabilitation program cannot be built except on a solid foundation—it can exist only to the extent that it is supported by the numerous elements of the entire workmen's compensation structure. If rehabilitation is to function successfully, workmen's compensation must become *rehabilitation-oriented*.[28] The concern with formulae to evaluate in terms of dollars and cents the effects of injury or disease must play a subordinate role to well-defined efforts to see that adequate medical care is being obtained and that rehabilitation services are procured when needed. The approach to claim settlement must be clinical rather than forensic. The benefit system and disability rating scheme must reinforce, rather than act as a deterrent to, rehabilitation.

An examination of the above concepts in further detail may be helpful.

There is no question about the existence, in California's present system, of what is described by Herman and Anne Somers as a "built-in conflict between the worker's interest in maximizing the apparent extent of his injury to obtain more adequate compensation and his desire to undergo rehabilitation in order to retrain himself for a productive life."[29] This conflict, the Somers go on to say, "may in part be inescapable, but there is little doubt that present methods of claims adjudication and disability rating intensify rather than mitigate the conflict."[30]

It has been amply demonstrated that the success of rehabilitation is a function of the promptness with which rehabilitation efforts are begun. And yet, under the present system, the injured worker tends to reject offers of physical and vocational rehabilitation, should they come his way, until an award has been obtained.[31] Realizing his earning capacity and employability have been jeopardized, the worker naturally attempts to secure as much financial reimbursement as possible. Money awards, in the short run, are more tangible and considerably easier to comprehend

than is a vague promise of rehabilitation. It cannot be considered unreasonable for a worker to refuse to risk decreasing his cash payments—which may not be adequate to begin with—by undergoing rehabilitation, the results of which are frequently unpredictable, and the benefits of which can seldom be made readily apparent to the injured man.

If the injured worker is to assume his share of the responsibility in the rehabilitation process, he must be assured that rehabilitation is not a means of depriving him of the benefits to which he is entitled. This assurance can be provided through:

1. *Adequate income maintenance*, "as a legal right, a social necessity, and because the security it offers can under proper circumstances assist in the rehabilitation process."[32]

2. *A disability rating system based on anatomical loss only.* Rehabilitation is impeded when earning capacity becomes a criterion.[33]

3. *Provisions for reopening cases* where rehabilitation has not been successful, and other necessary safeguards.[34]

4. *A high caliber rehabilitation program* which makes available services of the finest quality to every injured worker for whom rehabilitation is indicated.

A further modification of California's present system—if it is to become rehabilitation-oriented—is needed in the area of claims adjudication, and involves the emphasis placed on litigation. Workmen's compensation deals primarily with the victims of shock who are in the process of recovery or readjustment; the indicated method of procedure is clinical, not litigious. It is neither effective in terms of promoting recovery, nor humane, to subject a sick or emotionally disturbed person to the ordeal of listening while lawyers examine and cross-examine witnesses as to his physical condition and chance of recovery.

There is widespread agreement that prolonged litigation is bad for the health of the patient. Medical men who have contact with injured workers are unanimous in stating that the procedure by which workmen are compensated for injury under our present arrangements is medically unsound, particularly in its effect on the rehabilitation potential of the patient.[35]

The major problems of workmen's compensation are medical, but the administrations are staffed, on the professional level, mainly by persons with training in the law. In early 1955, California's Industrial Accident Commission had on its full-time staff seven physicians and 52 lawyers.[36]

Commenting on the attempt of most workmen's compensation systems in the United States to dispose of the real and substantial problems of the injured worker through a complicated system of monetary awards, Dr. Alexander P. Aitken, Chairman of the Subcommittee on Industrial Relations, American College of Surgeons, states, "It is perhaps natural that, as long as we attempt to handle the medical and social problems of the injured by legal minds through legalistic methods, our solution should be forensic in nature."[37]

It is certainly true that most compensation officials see the legal settlement as the primary responsibility.[38] Few of them stop during a typical hearing—described as the scene of discussions more abstruse than those of Talmudic scholars, the medieval philosophers, or the dialecticians of Greece[39]—to ask whether the injured worker has had adequate medical care, whether the tools of physical rehabilitation could be used to increase the worker's productivity potential, or whether he might be in need of vocational training or placement. It is to questions of this nature that the Industrial Accident Commission should be directing its concern.

Need for Supervision

AS A PREREQUISITE to a successful rehabilitation program, the Commission must know more of what is happening to injured workers than its referees learn from the files of the 8 to 10% of cases which come up for hearings. Without that knowledge it cannot be sure that injured workers needing rehabilitation will receive the necessary services.

Effective arrangements to refer those in need of rehabilitation to appropriate facilities are essential to the process of restoring the injured worker to maximum usefulness. Most of the discussion which has taken place between officials of rehabilitation and workmen's compensation agencies has been devoted to this problem,[40] without a completely satisfactory arrangement having been instituted anywhere in the states. The Task Force on the Handicapped termed the time lag between the injury of the worker and his referral for rehabilitation "a glaring deficiency . . . . of major proportions."[41] The Office of Vocational Rehabilitation estimates that the average length of this lag is seven years.[42]

Referral for rehabilitation must be prompt and must be made by properly qualified personnel. For effective referral, none of the techniques presently employed in California, with isolated exceptions, is adequate.

As to vocational rehabilitation, a spokesman for the Bureau of Vocational Rehabilitation complains that referrals from the Commission to the Bureau come either too early or too late[43]—too early, when based on the first report of injury, because the Bureau does not have adequate staff to begin the rehabilitation while the injured man is still in an acute phase of illness or injury;[44] too late, when based on the disability rating, because disability ratings are made months, and even years, after the date of injury.

Referral for physical rehabilitation is made, as has been mentioned, through the claims departments of the insurance companies. It is questionable whether these departments are staffed by men competent to make the decision as to who needs physical restoration. Rarely are they up to date on the newest medical developments in terms of rehabilitation potential. When they send a man out to be fitted for a prosthesis, to a prosthetic shop where he gets "a few pointers" on how to use the appliance, most claims men are

under the impression that their company has fulfilled its obligation; few are familiar with Dr. Howard Rusk's statement, with reference to arm amputees, that "if you give a man the best prosthesis money can buy and no training, 90% of the time it will hang in the closet and never be worn. If you give him training, 90% will wear it adequately and usefully."[45]

The importance of rehabilitation services for those suffering from minor injuries, such as common types of fractures, joint and muscle injuries, and wounds and sepsis is stressed by rehabilitation experts.[46] Few claims men, and a minority of medical consultants for the insurance companies, consider rehabilitation indicated for such conditions.

Stanwood Hanson, Assistant Vice-President, Liberty Mutual Insurance Company, in discussing the problem of who makes the determination as to the need for physical rehabilitation, points to the large number of cases "which did not have a rehabilitation because of ignorance on the part of persons handling the case, i.e., the employer, the insurer, the doctor, who simply had an absence of information regarding rehabilitation, and never considered it as a part of the treatment of the man at all."[47]

Further doubt is cast on the adequacy with which rehabilitation is handled by California insurance carriers upon examination of the responses to a series of inquiries as to their rehabilitation practices.[48] For example, the claims manager of one of the five largest California carriers, in discussing his company's policy regarding both physical and vocational rehabilitation, writes that "the carrier has not considered rehabilitation itself a responsibility," adding that "Generally, where at a period in the treatment of a case it becomes apparent to the doctor and the patient that rehabilitation is indicated we have found that by then the agencies have discovered the patient or he seeks them out."

These problems can be dealt with only through the initiation of an organized means of supervising medical care. This function can be performed directly by the Commission, as it is in many of the Canadian provinces, or—what is probably a more likely alternative for the United States—the program can be conducted by the carriers and coordinated and directed by the Commission.

Supervision of medical care under workmen's compensation includes, according to the principles outlined by the Subcommittee on Industrial Relations of the American College of Surgeons,[49] the duty:

1. To determine the accuracy of the medical diagnosis.
2. To see that competent and continuous medical care is provided as long as medically indicated.
3. To see that adequate medical and vocational rehabilitation is provided when indicated.
4. To make sure that an injured worker has obtained the maximum recovery possible before making any final financial determination of permanent disability.

Ontario's Medical Care and Rehabilitation

THE CANADIAN administrations, particularly Ontario, have developed impressive techniques for supervising medical care and rehabilitation under workmen's compensation. The Ontario Workmen's Compensation Act (Sec. 50) gives the Workmen's Compensation Board complete jurisdiction over and control of medical care. "Medical aid shall be furnished or arranged for by the Board or as it may direct or approve . . . . All questions as to the necessity, character and sufficiency of any medical aid furnished or to be furnished and as to payment for medical aid shall be determined by the Board." The basic thinking of the Ontario Board is summarized by Dr. D. J. Galbraith, its former Vice-Chairman: "We have determined that we shall, without fear or favor, unhampered by legal or medical dogmas, see that the victim of industrial accident or disease is offered the best, the most skillful, the most efficient medical and surgical care that the science of today affords. We say that no person, no matter what his financial or social status, should be able to purchase or obtain better care than our claimant—more luxurious perhaps, but not more sufficient."

"And," Dr. Galbraith adds, "this is not as difficult to arrange as it seems to those who have not tried."[50]

The injured worker has the initial free choice of doctor. The treatment rendered by the attending physician is supervised and, if necessary, controlled by the staff of well-trained medical officers attached to the Medical Department of the Board. All x-rays on compensation cases throughout the Province are sent to the Board's offices within one week of the injury, or payment to the doctor is denied. These x-rays are checked by a radiologist and orthopedic surgeon on the staff. Thus the Board has early information on both the severity of the injury, the treatment necessary, and the treatment rendered. When it is obvious to the medical staff of the Board that a certain doctor, either through lack of facilities or lack of training, is not competent to deal with an injury, a Board physician contacts him immediately by telephone or letter, and suggests that the patient be seen in consultation or moved to Toronto or to some other large medical center. In Toronto, the Board maintains 90 beds in three of the city's largest hospitals for the specialized treatment of the seriously injured. The surgical care is carried out by top-ranking independent specialists.

The Board has established its own rehabilitation center, where approximately 500 patients are treated monthly. All the patients live at the center. The staff consists of 22 physiotherapists, 22 occupational therapists, eight remedial gymnasts, three rehabilitation officers, one orthopedic specialist, nine medical officers experienced in physical medicine, and a medical superintendent. The over-all cost is around $6.00 per patient day, and this cost, which includes complete treatment, is charged to each claim as a medical aid charge. The center is divided into hospital and

ambulant wings. The cases are referred from the active hospitals as soon as definitive treatment has been completed.

During a patient's stay at the center, a weekly medical evaluation is made by the staff. If further surgery is necessary, the patient is referred back to the active-treatment hospitals. Progress notes are sent biweekly to the attending physician or surgeon. Rehabilitation and special placement officers are constantly in touch with the more seriously injured during their stay. Assistance is given by way of counseling, placement, and vocational training when necessary.[51]

According to Dr. E. C. Steele, Vice-Chairman of the Ontario Workmen's Compensation Board, the Board has the complete support of the medical profession for its medical and rehabilitation program. "The medical men throughout the Province heartily endorse and like our system of operation despite the supervisory aspect. They know they can have unlimited consultation and repeat x-rays along with diagnostic procedures. We stimulate them to give our compensation cases the best treatment available regardless of cost. This policy has paid off, and I can truthfully say that we have the complete cooperation of 98% of the medical profession."[52]

Dr. Steele, in a letter to the California Senate Interim Committee on Workmen's Compensation Benefits, suggests that one measure of the success of Ontario's medical care and rehabilitation program can be found in a comparison of percentage ratios of permanent disability cases to total compensation cases in the various jurisdictions of the United States and Canada. "Roughly speaking, the ratios in jurisdictions which do not practice medical supervision or rehabilitation were from 15% to 20%. (California's was 16.4%.[53]) In the Ontario jurisdiction the percentage ratio was 3.7%."[54]

Not even the most enthusiastic proponents of the Ontario system consider it immediately transferable to California. Several major factors in the California workmen's compensation situation are radically different from those operating in Ontario. In California the state-operated Compensation Insurance Fund competes with a large number of private carriers; Ontario has an exclusive State Fund with the result that the Commission's or Board's sphere of authority is significantly greater. Further, as pointed out by the Somers, "The Canadian agencies appear to hold an influence role in relation to the medical societies, employers, and labor which far exceeds that of their U.S. counterparts."[55] The position of esteem held by members of the medical staff of the Workmen's Compensation Boards in many of the Canadian provinces, both in the community and among their professional colleagues, is a source of amazement to the observer from California.

Recommendations for California

THE ONTARIO system has been cited as one jurisdiction's method of obtaining some control over medical care and rehabilitation. Other means can be employed to the same end. The three recommendations which follow are designed to bring California closer to a workmen's compensation system with a fully integrated rehabilitation program.

I. *Larger Appropriations to the Industrial Accident Commission.* In any attempt of the Industrial Accident Commission to supervise the medical care and rehabilitation of injured workers, or any aspect thereof, the power role of the Commission *vis-a-vis* the other groups concerned is a crucial problem. To quote again from the Somers' discussion of this point, "The statute books may say 'supervise', but if the agency does not have *de facto* power exceeding the parties it is to supervise, the words remain empty . . . . the present difficulties may at least partly stem from the conflicts of interest inherent in the compensation program, which place almost intolerable pressures on medical standards without the presence of any socially adequate authority to cope with such pressures . . . ."[56]

If the California Industrial Accident Commission is to increase its authority, a basic prerequisite will be more generous appropriations from the legislature. The California Commission is a relatively stable one. Its officers are able men. With sufficient funds they will be better able to make the adjustments in administration and in relationships with the medical and legal professions and the insurance industry necessitated by modern developments in workmen's compensation.

II. *Medical Management by Insurance Carriers.* The most elementary level on which the supervision of medical care and rehabilitation can be increased is through a program of medical management by insurance carriers. Such a program should be set up jointly by the Commission and the insurance carriers writing compensation in this state, in consultation with representatives of the medical profession, organized labor, and the employers. It should be directed and coordinated by the medical staff of the Commission.

A description of what medical management by a carrier can consist of has been provided by Mr. Solomon Senior, Compensation Claims Director of the New York State Insurance Fund.

1. The carrier should employ a Medical Director and medical consultants of outstanding ability and attainments.

2. The Medical Director and his staff should screen all initial medical reports.

3. The large percentage of trivial and routine matters should be passed without any significant intervention, provided that the generally indicated treatment is being administered by a physician of appropriate qualifications. A final check of these cases should be made after several weeks when the normal healing period can be expected to have produced recovery.

4. In the remaining, more serious, cases, the specialized consultant in the relevant field should telephone the attending physician on the day that the initial report is received, inform him that he

is interested in the case, and discuss with him the regimen that has been or is about to be instituted in order to be certain that there is unanimity in approach. Where indicated, the consultant should ask the attending physician whether a specialist has been retained and perhaps suggest that this be done. If the attending doctor evidences doubts or uncertainties, the consultant might help in arriving at a decision regarding treatment, consultation, hospitalization, etc. The consultant should contact the attending physician at appropriate intervals to ascertain the progress of the case, and in order to "nudge the attending physician and his consultants toward rehabilitative therapy and vocational restoration from the earliest possible moment and throughout the pendency of the case."[57]

Several of the carriers operating in California already have in operation a program directed toward the supervision of medical treatment. The State Fund, with four full-time physicians on its staff, has recently initiated a program of supervising medical care similar to that outlined above. Other carriers, however, have been completely inactive in this field. The problem of obtaining cooperation from insurance carriers in a uniform state program is considerable, in view of the fact that a significant number of the carriers do only an incidental part of their business in California. However, intelligent planning with legislative support can result in a workable scheme. It would be a conspicuous improvement if medical management programs, operating under standards enforced by the Commission, were instituted by every carrier operating in California.

III. *A Coordinated Referral Program.* A well-coordinated, institutionalized method of referral is needed to provide the assurance that the injured worker in need of rehabilitation will be spotted promptly and referred at the proper time to the appropriate facility for the training and care he requires. Proposals for an organized referral program to meet this need have been made by the Subcommittee on Industrial Relations of the American College of Surgeons,[58] and by the Association of Commerce and Industry of New York.[59] At the core of the plan of both groups is a medical and rehabilitation evaluation by a group of independent medical experts soon after injury.

An individual suffering from an industrial accident or disease causing or likely to cause a disability necessitating treatment or preventing return to usual employment within a period of not less than 60 days, would be referred by his attending physician, on or before the 60th day, to a medical panel, consisting of representatives of each of the relevant specialties. This panel would make a clinical diagnosis and rehabilitation evaluation, including a determination of work potential and the need for rehabilitation services, and could make recommendations as to treatment, procedures to be followed, and consultation by medical specialists.

The costs of the evaluation would be borne by the employer or carrier, possibly through an arrangement such as that proposed to raise funds to finance additional vocational training activities: a minimal increase on the "in lieu" tax of the insurance carriers. The panel would consist of medical men, none of whom is regularly in the full- or part-time salaried employment of a self-insured employer or a carrier authorized to write workmen's compensation insurance in the state. Its members would be appointed by the Commission; the Commission should consider utilizing the talents of groups of physicians, accustomed to working as a team, particularly in the rehabilitation context. Such groups exist already; with the expansion of rehabilitation facilities and with the increasing emphasis on rehabilitation and physical medicine training in the medical schools, their number will increase. In addition to its medical members, the panel might find it advisable to have sitting with it, in an advisory capacity, several of the non-medical members of the rehabilitation team.

After completion of the evaluation, the claimant would be referred promptly back to his attending physician. It would be the attending physician who would be expected to handle the referral to a rehabilitation facility, when recommended by the panel. In addition to meeting the need for an organized and effective means of referral, the evaluation of a disability shortly after its occurrence makes possible a determination of whether a different treatment and rehabilitative technique undertaken either by the attending doctor or at the hospital or rehabilitation center would shorten the period of disability.

The report and recommendations of the panel would be a valuable guide to the physician as well as to the agency responsible for checking on the progress of the case. It would be an aid to the carrier under a medical management program, and to the Commission if it were supervising medical care directly.

Economics of Rehabilitation

DESPITE the fact that rehabilitation is frequently an expensive undertaking, it can be justified on economic as well as humanitarian grounds. For employers, for insurance companies, and for the public, the costs of failure to rehabilitate are greater than those of rehabilitation.

The public reaps the economic benefits of widespread rehabilitation activities in that rehabilitation frequently transforms recipients of public assistance into wage earners. Studies by the U.S. Office of Vocational Rehabilitation show that persons who have been rehabilitated under the Federal program have paid to the government in income taxes 10 times the amount spent on their rehabilitation.[60]

For the employer there is the value of getting the experienced worker back on the job. Substantial savings for both employer and insurance carrier result from the reduction in indemnity payments made possible through the utilization of rehabilitation. In California, where the law provides unlimited medical benefits, pos-

sibilities for savings in this area alone are considerable.[61]

A survey of the effects of rehabilitation on costs conducted by the New York State Insurance Fund in 1953 showed that compensation costs were cut by more than $170,000 through the use of rehabilitation procedures.[62]

In a speech outlining the benefits of rehabilitation to the insurance carrier, Stanwood Hanson, of Liberty Mutual, described the process by which his company had originated its rehabilitation program. In 1942 Liberty Mutual made a study of a number of its most expensive cases to determine what action could be taken to reduce costs. Three principal causes of long-term disability were found: errors in diagnosis and early treatment, crystallization of disability during convalescence into a pattern of permanency, and inadequate placement program. Liberty Mutual has now developed a program to deal with these problems through supervision of medical care and rehabilitation. It maintains two rehabilitation centers for treatment of workers injured in the employ of its policyholders, and employs rehabilitation nurses in its offices throughout the country to keep in continuous touch with the injured man from the time of injury until his return to work.

Mr. Hanson cites his company's study of 35 rehabilitated paraplegics, which showed that the estimated savings in medical costs alone, through rehabilitation, were $1,688,800. With regard to lesser injuries, he pointed out that it is often difficult to determine just how much money has been saved by rehabilitation because the disability and ensuing cost of a given case if rehabilitation had not been applied cannot usually be ascertained. Nevertheless, Liberty Mutual has concluded that substantial savings result from rehabilitation of the routine everyday cases of injury as well as those of extreme disability.

Many other insurance carriers and employers are beginning to agree with Mr. Hanson's conclusion that "the greatest hope we have of bringing about reductions in compensation loss lies in our ability to harness to its fullest extent the know-how of medical, physical, and vocational rehabilitation."[63]

Conclusion

WORKMEN'S compensation, to emerge once more in the position it held some 40 years ago at the forefront of social legislation, must undergo basic revisions. Its direction must be toward the conservation of human resources; the concern—to the exclusion of all others—with disabilities and ways of measuring and "compensating" them can be tolerated no longer. The requisite knowledge exists for immense achievements in restoring handicapped persons to a productive life; it waits to be integrated with existing laws and arrangements of workmen's compensation.

The integration of rehabilitation into California's compensation system can be the impetus which will make workmen's compensation in this jurisdiction a program which is fashioned in response to a realistic appraisal of needs and cognizance of modern methods of meeting these needs. Major changes must be made. Methods must be found to determine at the earliest possible date the seriousness of the injury and the competence of medical care. Referral for rehabilitation must occur promptly and at the hands of competent personnel. Rehabilitation must be a program coordinated within itself and with the compensation program. Conflicting forces between the compensation program and potential rehabilitation must not be allowed to exist. Adequate rehabilitation facilities must be at hand so that required services can be obtained.

The proposals contained in this paper are founded on the belief that workmen's compensation can be a vital demonstration of the ability of society to meet the responsibilities which it has assumed toward those who produce its goods.

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15. Quoted in *ibid.*
16. Letters to the author from WILLIAM H. JAMES, Director, MAY T. MORRISON Center for Rehabilitation, June 1, 1955; from THOMAS M. POPE, Administrator, California Rehabilitation Center, June 1, 1955; from V. BRAMMER, Administrator, Kaiser Foundation Hospital, November 18, 1953. No current figures for the last year are available.
17. Interview with LEONARD YAMSHON, M.D., June 29, 1955.
18. California Legislature, Senate Interim Committee on Workmen's Compensation Benefits. *Final Report*, 1951, p. 9.
19. California Legislature: *Report of Senate Interim Committee to the Senate on Workmen's Compensation Benefits*, Part One, 1953, pp. 167, 168.

20. Letter to the author from FRANK E. HART, JR., *op. cit.*

21. State of California, Department of Industrial Relations, Division of Labor Statistics and Research: *California Work Injuries*, 1953, pp. 37, 42, 44.

22. California Legislature: *Report of the Senate Interim Committee on Education and Rehabilitation*, 1955, pp. 74, 75.

23. U.S. Department of Labor, Bureau of Labor Standards: *Workmen's Compensation Problems*, Bulletin 142, 1950, p. 170.

24. *Ibid.*

25. D. J. GALBRAITH, M.D.: "Improving Medical Service to Workmen's Compensation Claimants to Facilitate Rehabilitation," in U.S. Department of Labor, Bureau of Labor Standards. *Proceedings of the National Conference on Workmen's Compensation and Rehabilitation*, Bulletin 122, 1950, pp. 43, 44.

26. Letters to the author from WILLIAM H. JAMES, *op. cit.*, and THOMAS M. POPE, *op. cit.* MR. JAMES reports that the only exception to this situation is in the case of in-patients; there are times when a number of referrals for in-patient care are waiting for admission.

27. General hospitals are tending increasingly to allocate space for rehabilitation services under the direction of a well-organized staff. The California Legislature in its 1955 session allocated $8,000 to the University of California to augment planning money for a rehabilitation center to be established in connection with the University of California, Los Angeles, Medical School.

28. Many of the basic concepts in this and subsequent sections the author owes to her contact with the knowledge and insights of MARSHALL DAWSON.

29. "Workmen's Compensation: Unfulfilled Promise." *Industrial and Labor Relations Review*, 7:1, 36 (October) 1953.

30. *Ibid.*, p. 37.

31. ALEXANDER P. AITKEN, M.D.: "Rehabilitation in Workmen's Compensation," in U.S. Department of Labor, Bureau of Labor Standards, *Workmen's Compensation Problems, 1952*, Bulletin 167, pp. 212, 213.

32. HERMAN M. SOMERS and ANNE R. SOMERS: Workmen's Compensation. New York, John Wiley & Sons, Incorporated, 1954, p. 262.

33. Further study is needed of the specific effect of California's rating schedule on rehabilitation. Anne Somers suggests that the effect is a negative one, and cites as an example the penalty imposed on the successful rehabilitant if the rating experts take literally the legislative injunction to consider the injured worker's ability to compete in the open labor market. (Letter to the author, August 15, 1955.)

34. POLLACK: "Medical Care and Rehabilitation Under Workmen's Compensation." *American Journal of Public Health*, 45:5, 648 (May) 1955.

35. See, for example, Rusk's conclusion from a study of 300 back cases, in "Application of Rehabilitation to Workmen's Compensation Cases." *Medical Aspects of Workmen's Compensation*, New York, Commerce and Industry Association of New York, Inc., 1953, pp. 68-69.

36. Letter to the author from ANSHALL NELSON, Administrative Assistant, Industrial Accident Commission, January 26, 1955.

37. Aitken, *op. cit.*, p. 212.

38. Somers: Workmen's Compensation, *op. cit.*, p. 260.

39. HENRY H. KESSLER, M.D.: Rehabilitation of the Physically Handicapped. New York, Columbia University Press, 1953, p. 50.

40. See, for example, *Proceedings of the National Conference on Workmen's Compensation, op. cit.*

41. Office of Defense Mobilization: Report of the Task Force on the Handicapped, 1952, p. 31.

42. *Ibid.*

43. Letter, MR. F. E. HART to MISS HAZEL FURSCOTT, 1953.

44. Although prevented by law from rendering medical services until a condition becomes fixed or static, the Bureau of Vocational Rehabilitation, according to ELLARENE MCCOY, M.D., Consultant, California State Department of Education, Bureau of Vocational Rehabilitation, has the legal authority to begin vocational training before the condition is static, as long as it is known that a permanent disability will result. (Conversation with the author, August 22, 1955). The fact that rehabilitation usually is not begun until the condition becomes fixed is an administrative and staff problem rather than a legislative one.

45. RUSK: *op. cit.*, p. 59.

46. M. WILLIAM ZUCKER: "Early Referral—The Key to Rehabilitation." In *Studies in Workmen's Compensation*, Commerce and Industry Association of New York, 1953, p. 59.

47. "The Effect of Rehabilitation on Workmen's Compensation Losses." In *Medical Aspects of Workmen's Compensation, op. cit.*, p. 102.

48. Inquiries sent by Institute of Industrial Relations, University of California, Los Angeles, to sample of insurance companies, May, 1955.

49. U.S. Department of Labor, Bureau of Labor Standards: *Workmen's Compensation Problems*, Bulletin 180, 1954, p. 34.

50. "Ontario's Conception of Responsibility to the Injured Workmen." In U.S. Department of Labor, Division of Labor Standards, *Discussion of Industrial Accidents and Diseases*, Bulletin 87, 1947, p. 12.

51. Letter, E. C. STEELE, M.D., Vice-Chairman, Ontario Workmen's Compensation Board, to H. E. MCCLELLAN, February 1, 1954.

52. *Ibid.*

53. U.S. Department of Labor, Bureau of Labor Standards, *Workmen's Compensation Problems*, Bulletin 172, 1953, p. 58.

54. STEELE letter: *op. cit.*

55. Somers: Workmen's Compensation, *op. cit.*, p. 173.

56. *Ibid.* p. 173.

57. Letter from MR. SENIOR to MARSHALL DAWSON, September 23, 1954.

58. U.S. Department of Labor: Bulletin 180, *op. cit.*

59. Zucker: *op. cit.*

60. Study cited by LARSON: *op. cit.*

61. Even though such savings can be shown to result from the utilization of rehabilitation, employers cannot be expected to cooperate wholeheartedly in initiating the necessary programs on this basis alone. As pointed out by EDWARD S. FELDMAN, Executive Secretary, Furniture Manufacturers Association of Southern California, "What appears to be economical, and therefore, desirable, in the long run will frequently be subordinated to the immediate expenditure of additional funds in insurance premiums." (Letter to EDGAR L. WARREN, Director, Institute of Industrial Relations, UCLA, August 4, 1955.)

62. U.S. Department of Labor: Bulletin 180, *op. cit.*, p. 40.

63. "Benefits to the Carrier in Rehabilitation of Compensation Cases," in Institute for the Crippled and Disabled. *Report of a Conference on Rehabilitation in Compensation Cases*, New York, 1952, pp. 25-29.

"Appraisal"

ATCHLEY (DANA W.) has suggested that the total medical needs of the older patient may be better served if the thought expressed in the word *appraisal* be substituted for *diagnosis*, and the word *management* be substituted for *treatment* or *cure*. Such an attitude would assist the physician to shift his preoccupation with cure to a fascination for management of the sick individual. This is particularly important in the care of the older patient where the impact of living adds its weight to the burden of disease. The elderly patient may be "cured" of his "fever" but a comprehensive history and inventory may disclose personal problems more damaging than the "fever."

—From "Some Comments on the Medical Management of the Older Person," Editorial by DAVID SEEGAL, M.D., in *J. Chron. Dis.*, January, 1956.

Prevention of Eye Accidents in Sugar and Pineapple Industries of Hawaii

WILLIAM JOHN HOLMES, M.D., Honolulu, Hawaii

IN HAWAII, during the past eight years, great strides have been made in the field of industrial ophthalmology. For instance, on 10 sugar plantations in 1946-47, the ratio of eye injuries to all other injuries was 20%; in 1954, this ratio was only 1.2%. On 10 other plantations there were 93 lost-time eye injuries in 1947, contrasted with 34 such accidents in 1952. At Ewa Plantation, in 1944, there were 140 eye accidents; in 1954, there were only 49, none of which was classified serious. At the Hawaiian Pineapple Company, in 1945, there were 50 major and minor eye injuries, compared to 22 non-disabling eye accidents in 1954. This decline in the incidence, nature and severity of eye accidents has come about from the adoption of a comprehensive safety program by management and its wholehearted support by both management and labor.

Photomicrograph of sugar cane leaf.

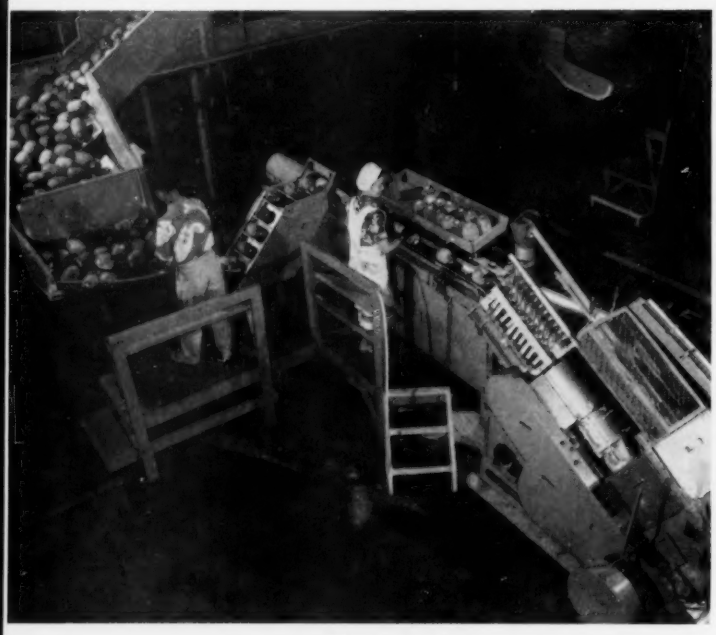
The engineering phase of this program consisted of several stages.

First, a thorough survey of each job and operation was made, the working conditions and equipment were inspected, and the nature and degree of hazards estimated. It was found that the leaves of sugar cane and the pineapple fruit have thorny edges and taper in sharp pointed ends. In cutting sugar cane and during picking and planting pineapple, there was considerable danger of eye injury. The application of fertilizers by airplane or tractor rather than by hand and the wearing of approved eye protection greatly reduced the incidence of eye injuries from these hazards. Adequate illumination was provided throughout. Guards and warning signs were installed on machinery and in hazardous areas. "Color engineering" was employed to caution workers against dangers and to reduce ocular fatigue. In this regard, it is interesting to note that a color code with a language of its own has evolved and has been successfully put into operation: Orange denotes any hazardous area such as movable parts of machinery where adequate safeguards cannot be provided; warning blue is used on electric starting and stopping levers and on switch control boxes; fire red indicates fire prevention and control

Fertilizing by airplane.

Weed control by hand.

Overhead fluorescent illumination for pineapple cannery.



Ginaca machine.

equipment such as the location of extinguishers, fire hose, hydrants, water barrels and sand buckets; yellow is used where high visibility is necessary, such as on protruding objects, on both stationary and movable equipment or where it is necessary to insure attention such as on crane hooks, stairways, finger-lifts, trucks, and conveyors; black and white stripes indicate traffic lines and safety and work areas around machines.

Closed-circuit mechanical systems were installed wherever possible for potentially dangerous jobs. The use of Ginaca machines in the pineapple industry to remove the shell and core, cut off the ends, and cut cylinders from the heart of the fruit is a good example of delegating hazardous jobs to machines.

The precautions employed in the chemical phase of this program depended upon exposure time, the nature, toxic hazards and concentration of the chemical. It involved the following steps:

1. Elimination of potentially dangerous chemicals and poisons and their substitution wherever possible with compounds of lesser toxicity. Sodium arsenite and other arsenicals which were formerly used as insecticides have been largely discontinued. Two-thirds USP strength of dilute aqueous ammonia is still used as a soil fertilizer. The herbicides presently employed include the sodium salts of trichloracetic acid (TCA), dichloroproprionic acid (dalapon) and of pentachlorophenol (HSPA Activator).

2. Strict adherence to the Federal Label Allowance. This refers to compliance with the instructions on the label of each container regarding the amounts to be used, the precautions to be taken, and the allowable residue that may remain on the marketable crop.

3. Adherence to the AMA Threshold Limit Values. This denotes the maximum average atmospheric concentration of contaminants to which workers may be exposed during an eight-hour working day without injury to their health.

4. Adherence to the recommendations of the Manufacturing Chemists Association. On dangerous chemicals the labels warn of the risks and in case of poisons recommend the antidote to be used by the physician.

5. Application of fertilizers and other strong chemicals by machines.

Acids and soil fumigants were used in closed systems. Caustic soda which is used in the processing of some herbicides was mixed into solution in an underground vat. Only a few specially trained persons were exposed to these chemicals. They were protected by goggles, face shields, respirators, synthetic rubber gloves, and the like.

In the pineapple industry, in slicing, cutting and sorting the fruit, pineapple juice frequently gets into the eyes. Owing to the relative non-volatility and low irritability of the chemical components of the pineapple fruit, the juice posed no problem from the standpoint of irritation to the eye. Though temporarily irritating, the effects wear off quickly and do not cause permanent partial disability.

CHEMICAL COMPOSITION OF THE PINEAPPLE FRUIT

Total sugars	10-16%
Sucrose, $C_{12}H_{22}O_{11}$	7-12%
Reducing sugar, $C_6H_{12}O_6$	3-5%
Acid as citric, $(COOH)CH_2C(OH)(COOH)CH_2COOH$	0.4-1.3%
pH	3-4
Proteolytic enzyme, bromelain	Present before heating
Carotene pigments	1-2 ppm

If juice from the unheated fruit, containing bromelain, or the by-product powdered bromelain itself gets into the eye, mild acute conjunctivitis may result from the action of this proteolytic enzyme. The latter is used as a meat tenderizer or a protein hydralizate in the treatment of wounds and burns. Citric acid is another by-product which may cause chemical conjunctivitis.

THE EDUCATIONAL phase of the safety program embraced some or all of the following: (1) Safety training—This consisted of explanation of safety rules and "on the job" demonstration of safe work methods. (2) Publicity—This was accomplished by means of films, posters, bulletin boards, signs and slogans, plant newspapers, and magazines. (3) Safety meetings—At Ewa Plantation, five-minute safety talks were given each morning by various supervisors. (4) Designation of Safety Days twice a year—On these days, all phases of housekeeping were scrutinized and all equipment was re-inspected. (5) The presentation of Awards and honors for good records.

At Ewa Plantation, the wearing of approved eye protection was required on the following jobs:

1. Any operation in or adjacent to cane that is waist-high or higher, such as: (a) hand weeding; (b) fertilizing; (c) irrigation; (d) cutting seed; (e) cutting cane or leaf samples; (f) pushing cane; (g) fencing; (h) stripping cane.

2. Working as a member of a harvesting crew and other work associated with harvesting operations: (a) ground crews; (b) rake and loading machine operators; (c) Liliko crew; (d) burning-off crew; (e) Tournehauler operators; (f) mill-yard crane operators.

3. Handling and transporting dry ashes, bagasse and mud press.

4. Miscellaneous: (a) all shop work; (b) operating power tools; (c) grinding; (d) chipping; (e) cutting firewood; (f) cracking or breaking rock, concrete, etc.; (g) "off-season" repair to factory; (h) any repairs to factory during "Grinding Season."

5. Handling and transporting weed spray solutions: (a) preparing stock solutions; (b) spraying operations; (c) transporting of chemicals and weed spray solutions.

6. Handling caustic soda, soda ash, and acid not in sealed containers.

Wearing any approved eye protection on jobs other than specified was left to the judgment of the supervisor in charge. Notices were posted that "Failure to comply with the foregoing may cause disciplinary action."

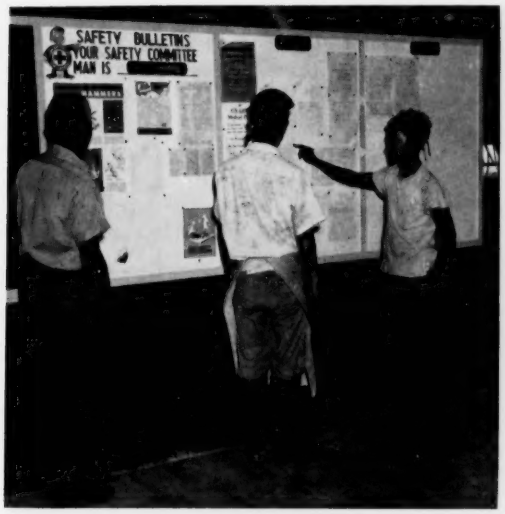
Failure to use goggles because of awkward appearance, fogging due to heat and humidity, or merely thoughtlessness was responsible for several eye injuries. To overcome these objections, on some plantations, spectacle-type, case-hardened safety glasses were substituted for the cup type of goggles. On other plantations special wire mesh guards attached to hard-brim safety hats were issued. This combination did not fog like ordinary goggles; it was cool and afforded protection to the face from sharp objects as well as from the rain.

THE ACCIDENT reporting and investigating phase:

All accidents were reported immediately, accurately and adequately. The causes that were responsible were thoroughly investigated and analyzed by a management-labor safety committee. This committee made recommendations on methods to prevent recurrences and to promote safety.

THE MEDICAL and protective equipment phase:

Pre-employment physical and eye examinations were done routinely. Those with defects or handicaps were re-examined yearly or oftener. As a rule, visual standards for new employees were



Safety bulletin.

Blind employees folding crates.

higher than those required for old experienced employees. Rigorous visual standards, requiring excellent distance vision, depth perception, muscle balance, and color vision were established in both industries for jobs dealing with machinery, truck drivers, finger-lift operators, and those working with heavy equipment. In the pineapple industry, visual standards emphasizing good near vision and color discrimination were set up for those working at the trimming, slicing, inspecting, and selecting tables. For these jobs a minimum ability to read Jaeger three print with both eyes, corresponding to six-pica type, was the prime visual requisite. Safety goggles incorporating visual correction were issued for those who needed them. These goggles were carefully fitted and adjusted whenever necessary by trained plantation goggle fitters. Face shields and respirators were also issued for certain jobs. New employees were guided into jobs that corresponded with their visual efficiency. Persons with only one eye were assigned to jobs free from eye hazards and were not allowed to operate moving vehicles. For work that required primarily manual sensitivity and could be done perfectly well with the eyes closed, blind persons were employed. The Hawaiian Pineapple Company has several blind people working in its labeling department, folding crates. According to Dr. William Wilkinson, the work performance of these blind workers has been exceptionally good. He attributes this to their working without interruption or without going out for a periodic stroll.

When eye accidents do occur, facilities are available for immediate first aid.

Corneal abrasions, scratches, cuts, "pokes," and ulcers are readily diagnosed with the aid of 5% sodium fluorescein. The majority of these superficial injuries heal within 24 hours. They respond well to frequent—hourly or two-hourly—instillations of 0.5% Ophthalmic Cortisone or at times 2.5% Hydrocortisone solutions. Dark glasses are of special value in Hawaii's sunny climate.

Conjunctival and corneal foreign bodies still occur frequently in both industries. At the pineapple canneries in Honolulu, the prevailing winds often blow dust and dirt from boilers and from the nearby Gas Company to the eyes of pineapple employees working in the yards. In the sugar industry, the burning of cane fields preliminary to harvesting may carry soot to the workers' eyes in the fields.

If a foreign body is imbedded in the cornea, the patient's vision should be tested before it is removed and again before he is discharged. Following removal, under 0.5% Pontocaine or 0.5% Ophthaine topical anesthesia, an antibiotic ointment, such as ophthalmic Bacitracin is instilled into the conjunctival sac. Mydiatrics such as 1% atropine should be used only if there is obvious evidence of iritis. In instances when the conjunctiva or the eyeball has been lacerated or an intraocular foreign body is suspected though not readily seen, x-rays of the orbit should be taken. Contusions of the eyeball are frequently masked by ecchymosis of both lids. These eyes should be carefully examined and the findings recorded. Traumatic cataract, dislocated lens, tears of the iris, retina, choroid, and secondary glaucoma may cause permanent visual disability and bring with them medicolegal complications.

Active treatment of chemical injuries consists of prompt, copious irrigation with tap water, dilute normal salt solution, boric acid, or the HSPA collyrium developed by Dr. Francis E. Hance, Principal Chemist of the Hawaiian Sugar Planters Association.

HSPA Collyrium

Rx Sterilized distilled water	97.940
Berberine sulfate (from hydrastis)	0.020
Boric acid, USP	2.000
Gum camphor (natural) USP	0.015
Benzoic acid, USP (from gum benzoin)	0.025
	100.000

All chemical burns are potentially dangerous. They may result in some degree of visual loss, even blindness, unless treated adequately.

Lastly, the role played by psychologic factors

Adjusting goggles in the field.

Cutting sugar cane.

Annual and pre-employment visual screening.

Fully equipped dispensary. Nurse renders first aid to employees with eye injuries.

must also be considered in the genesis of all accidents, including those involving the eyes. Individual pre-disposition, maladjustment, and irresponsibility, the possibility and availability of compensation, effects of oversolicitous associates and families in certain cases determine or influence the occurrence and nature of, and convalescence from, accidents.

I should like to conclude with the thought that the ideal in industrial medicine is prevention. A trained physician's primary concern is the rehabilitation of the sick and injured. The physician in industry must broaden this concept and accept the challenge for the care, promotion and maintenance of good health. In Hawaii, the Territorial Association of Plantation Physicians, with the backing of industry and the cooperation of labor, has met this challenge.

(1013 Bishop Street.)

Examinations

TOP MANAGEMENT must be sold on physical examinations, i.e., pre-placement and periodic examinations and must insist that all employees be examined every one, two or three years as indicated. The President of a company should set a good example, and if he is on the "ball" he will. Tony Clark, Past-President of The Carborundum Company, once called me and said, "Why haven't I been examined lately?" Well, the answer was, "Examinations for the executives, were not set up in the budget — we can't afford it." It wasn't long after that until an order went through that all executives be examined. In the Carborundum Company top executives are examined every two years. Those employees in the so-called exempt, non-exempt and hourly groups are examined every three years. Blood pressure, eyes, ears, nose, throat, heart, lungs, abdomen, spine and extremities are checked. X-ray examinations are made of the heart and lungs. Urinalyses are done on all employees to detect kidney trouble or diabetes. Where indicated it is left to the discretion of the medical examiner to have cardiograms or complete blood tests in all groups. Following these examinations, employees are notified if there is any condition which needs the attention of the family physician or a specialist. The employee really gets the feeling that the company is doing something for him in protecting his health and in saving him money, and that the company is interested in him.

—From an Address on "Human Relations from the Medical Viewpoint," by G. P. EDDY, M.D., Medical Director, The Carborundum Company, Niagara Falls, New York.

Industrial Hygiene Foundation

Twentieth Annual Meeting, November 16-17, 1955

LAST month's Journal included Industrial Hygiene Foundation's abstract of the presentation entitled "Foundation Facts" by C. Richard Walmer, M.D., Managing Director, given at the Foundation's Twentieth Annual Meeting at Mellon Institute, Pittsburgh, November 16-17, 1955. This month, beginning on this page will be found the Foundation's abstract of the study by Daniel C. Braun, M.D., the Foundation's Medical Director, entitled "Evaluating Industrial Medical Departments." This will be followed by two abstracts from the panel on "Relationships Between the Medical Department and Management" presenting the "Medical Views," one by B. A. McAleer, M.D., and the other by McIver Woody, M.D. Then follows the Foundation's abstract of the comments by Mr. James L. Hill entitled "Medical Testimony in Compensation Cases" given at the Legal Conference.

The Program and the full text of the presentation at all the sessions are to be published by the Foundation.

Evaluating Industrial Medical Departments

DANIEL C. BRAUN, M.D., Medical Director
Industrial Hygiene Foundation

THE FOUNDATION has now accumulated a considerable experience in the evaluation of medical and related services in industrial establishments, and this experience covers many types of plants both large and small. For this reason, we believe that a report based on some of the things we have learned in making those surveys of medical policy and practice would be useful to you in connection with your own Medical Departments. Obviously, those companies which have commissioned the Foundation to make such a study are among those who already realize that the Medical Department serves a constructive purpose and who do not regard it as merely a necessary item of expense. We may assume, then, that they are aware of the benefits to be gained by providing a good medical service. We are *not* so sure, however, that the proper functions and *full* potential value of the Medical Department are universally understood and appreciated. We have learned that management frequently is too easily satisfied with the program existing in its plant. Sometimes, after hearing a plant manager describe his Medical Department proudly, even glowingly, it is something of a shock to discover that it really is only a first-aid program, and woefully inadequate for the plant's requirements. In most cases, I am sure that such executives just don't know what they should expect from their medical service. In a few, they are fearful that to improve and extend the service would be too expensive. The opposite condition exists, too. In this situation, the Medical Department is so elaborate, and the services so extensive that management just *assumes* that it must be everything it should.

THE OBJECTIVE OF THE MEDICAL SURVEY: Here we find the primary purpose of the medical evaluations we have made: to determine what is adequate for the needs of an organization and its component plants, and to assure that the greatest amount of efficient, proper service is being obtained for a given outlay of money. The benefits accruing from a medical program are not as readily obvious as the results of a safety program. They are slower in making their presence felt, and are much more intangible in nature than figures showing the number and cost of industrial injuries. Not easily shown on a chart or graph are the reduction in the time that machines stand idle because the operators are ill, or the dollars and cents savings resulting from maintaining the executive group in a robust state of health, or the greater production attributable to a healthy work force. The difficulty is especially obvious when one realizes that these results may appear only some years after the efforts of the Medical Department. There is good reason why the evaluation must be made through an objective survey. Such an evaluation is as logical as an audit of the financial transactions or a review of operating procedures.

PROGRAM MUST BE INTEGRATED, COMPREHENSIVE AND POSITIVE: The occupational health program is an *integrated, comprehensive,* and *positive* program for maintaining the health of workers of all grades, similar in many respects to the maintenance provided for the valuable *physical* assets of the company. It is *integrated* with the primary objectives of the company on the one hand, and with the private practice of medicine and the functions of official public health agencies on the other. Properly, it seeks to do its work without infringing on or conflicting with any of these. It is comprehensive within the prescribed ethical limits of industrial medicine. It is positive in that it does not content itself merely with the repair of injury or the cure of occupational disease, but seeks by all the means at the disposal of modern medical and engineering science, not only to prevent injury and illness, but to maintain in a good state of health the whole working population. Ever since we realized that occupational illness—i.e., illness arising out of and in the course of employment—accounts for barely 10% of the illnesses that result in absenteeism and inefficiency, we have known that medicine in industry must concern itself with the prevention of non-occupational illness, as well. Our comprehensive program must, therefore, include periodic examinations, counseling and referral, and

other measures to insure a continuation of good health in the workers. But we must distinguish between "comprehensive" and "complete." The ideal program of occupational medicine is not complete in the sense that it attempts to substitute for the family physician or the existing public health services. To do so involves many dangers. Perhaps foremost is the legal liability which the company assumes by allowing treatment of non-industrial conditions. Again, the good will which they are seeking to build up in this fashion may actually turn into resentment, if the employee feels his personal affairs and preferences are being interfered with. Of great importance, also, is the likelihood that these "welfare" functions may gradually come to be included in the so-called "fringe" benefits, and become areas for collective bargaining, eventually forcing the entire medical program into the center of a tug-of-war at each contract negotiation.

STEPS IN THE MEDICAL EVALUATION: There are a number of basic procedures involved in the medical survey, of which we may consider several of the most important. When we conduct a study of this kind, one of the first things we ask for is a conference with top management for the purpose of broadly outlining the problem. As one result of such conferences, we are usually able to determine the general attitude of management toward the medical program, including what they expect from it, how policy is established, the place of the Medical Department in the organization, and, perhaps, the areas of weakness or dissatisfaction. Usually next is a general tour of the plant or property in order to get some idea of its size, the geographic locations, the number of employees in different areas, processes engaged in, and any hazards which may be inherent in these operations. As soon as possible, we meet the personnel of the Medical Department, observe their personalities, and inquire into their background, and training. Interviews are also arranged with those persons in related departments such as personnel, employment, safety, insurance, and industrial relations, with whom the Medical Department has frequent association. During this time, also, adequate attention is given the matter of the administration of the program. The close scrutiny given to the Medical Department records is to establish the magnitude of the case load, the type of injuries most commonly encountered, and the number and kind of occupational diseases and the areas in which these diseases and injuries occur. In the absence of a previous or concomitant industrial hygiene survey, these methods give the best information upon which to design a health program for the specific industry under study. The examination of forms and records in use also helps us to determine in each case whether paper work is cumbersome or whether it represents the minimum necessary to record and retain needed information. Finally, costs of each phase of the medical service are carefully gathered and tabulated. Each survey presents individual considerations such as the availability of hospital facilities, the need for company-owned ambulances, the proper number and location of first-aid stations throughout the plant, or the design of periodic examinations for those workers with potential exposures to certain toxic substances. It is by these steps that we progress through a survey of medical needs, and from them that we learn the facts from which we are able to make suggestions.

MANAGEMENT ATTITUDES DIFFER: Among other things, we have learned from these surveys that there is, indeed, no real uniformity between existing programs. There are those in management who feel that the Medical Department should concern itself only with *treatment*, and perhaps the defense of compensation claims—a sort of "trouble-shooting" activity. At the other extreme are those who place the whole medical service in the category of free baseball uniforms and annual picnics—a kind of open-handed policy which represents an attempt to keep the employees "happy." Between these extremes we find a larger group, trying to operate their Medical Departments so as to provide the proper services to the employees and at the same time return the logical benefits to the company. It is organizations with *this* attitude that we feel we have most often been able to assist. Much variation in the *administration* of the medical program has been noted in surveys. While most have at least a part-time physician, we have found Medical Departments administered by non-professional persons and by laymen with a little professional training. Many small programs and some of considerable size are run by nurses. The personality, background, and training of physicians in industry are matters which have been shown to have the widest divergence imaginable.

CHARACTERISTICS OF THE INDUSTRIAL PHYSICIAN: It is interesting to attempt a profile of a plant physician or Medical Director, as found in surveys we have made. He will be anywhere from 32 to 72 years old, with industrial experience not necessarily corresponding to his age. He may be by training a general practitioner or internist, more often a surgeon. But rarely has he had specialized instruction in industrial medicine or in administration. Sometimes he has been a plant physician, suddenly transplanted to the role of administrator because of a vacancy or an expanded program. His qualifications, especially his personality, vary between excellent and *extremely* poor. There were two occasions on which we discovered that the physician was not a regularly trained physician and not even accredited to practice. The doctor's remuneration shows wide fluctuation, even among different plants of the same company. Most common, of course, is the arrangement where the physician is only part-time, or even on-call, and is paid a fee for each case. A modification of this is a combination of hourly or monthly retainer fee plus an additional fee per case. Hourly fees reported to us range from a minimum of $4.00 to a maximum of $20.00. In still other instances, the physician receives a straight monthly salary or retainer. An important observation in this connection has been that the doctor who is on-call, or on a part-time arrangement, usually does not look upon himself as being a part of the organization. His interest in the company and in its work are naturally secondary to his private practice, from which the greater proportion of his income is derived. There are, of course, notable exceptions. Furthermore, this arrangement is sometimes very expensive, and we have often seen instances in which the plant actually was paying more for part-time medical service than it would had it employed a full-time doctor who was interested in and trained for the work. Our surveys have shown that the actual time which the part-time physician spends in the plant may be anywhere from zero to 15 or 20 hours a week. Only rarely does the part-time physician make plant inspections, and when he does, they are frequently sporadic and cursory. Curiously enough, in a few cases, management was found to discourage such

tours by the doctor. More often than not, the part-time physician is never called upon to consult with management on such problems as environmental health, safety, retirement, or selective placement.

MEDICAL PRACTICES AND PROCEDURES: When we come to medical practices and procedures, there is so much variation that it is sometimes impossible to make definite comparisons between the different plants of the same company. There *is* considerable uniformity in the matter of treatment of occupationally connected illness and injury, possibly because of the more or less uniform requirements of law. I have referred to the extensive treatment of non-industrial conditions in some companies, but we find that the majority do confine their activities here to what is generally considered the ethical limits of industrial medical practice, which can be concisely stated by quoting the American College of Surgeons, as follows: "Reasonable first aid and advice for employees suffering from non-industrial illness or injury while on duty. For further professional care, such employees should be referred to their own private or family physician." Even in those practices which exist almost universally, we find extremes in the manner of their execution. The preplacement examination, for example, is rather generally used, but there is little uniformity in the way in which it is carried out. It is unusual to find it designed with regard for the type of work the applicant will be assigned to, or the environmental conditions under which he will work. We have found that the time devoted to the examination is unbelievably variable, ranging from a couple of minutes to an hour. The scope and quality, as you may imagine, are in the same proportion. All sorts of variety exists in making known the results of the examinations. Occasionally the applicant is furnished with a copy of the examination; sometimes any important findings are sent to his own physician. But in many cases, he is dismissed from the examining room without a word, and must discover from the employment office whether he has passed his examination. The same differences exist with respect to the records. In a few cases, they are completely confidential, and retained in the Medical Department. In others, they are accessible only to the designated individuals, and, in still others, they become the property of some other department and are made a part of the general employment records, available to anyone who may have occasion to review the latter. We find a remarkable variation in the rate of rejection on physical examination. The extremes are a fraction of 1% on the one hand, and 40 to 50% on the other. One cannot escape a conclusion that in the very low rates either the examination is not sufficiently complete or the examiner is missing important signs and symptoms. Where rejections are very high, it seems equally obvious that a sufficient attempt at selective placement is not being made. Another disturbing finding in connection with rejections on physical examination is that in some plants the employment department often completely disregards the advice of the medical examiner and will place an applicant in spite of adequate grounds for rejection found during the proper physical examination. This, of course, can nullify the entire program of physical examinations. In periodic examination programs, still more deviation has been found. In many cases, the periodic examination is non-existent; in others it is applied only to selected classes of employees and, here, the greatest variation is in the time interval between the examinations, which usually is based on the age of the person examined. The extent of the examination also varies widely, including only the most simple laboratory tests in some, and elaborate x-ray and laboratory investigations in others.

COST OF MEDICAL SERVICES: As might be expected in view of the extreme variations in the services and scope of medical services, the differences in per capita cost are also very wide. In a long series of surveys, we have found it to vary from $5.00 to $170.00, and in a single survey, the direct medical costs per employee per year varied between $6.02 and $108.86 in different plants of the same organization. Even allowing for local differences in costs, it is obvious that all workers in this organization could not have received the same type of medical care. When we have accumulated our findings in these and similar areas, we make recommendations based on them, and on our experience with other companies in comparable circumstances.

CONCLUSIONS: Careful analysis of the results of surveys made to this time shows that the better, most successful medical programs are those which have behind them an interested and constructive attitude on the part of management. One can speculate upon whether this is cause, or effect. Certainly a poorly administered program will not long retain the respect and support of management, and we have repeatedly found that a good program on paper can be a dismal failure in practice, under incompetent direction. If there is one element more important than the medical program itself, it is the physician who directs it. A good medical administrator has the ability to secure management support. He can also win the confidence of the employees, which is so necessary to a successful program. Out of his own experience and training, he will be able to solve the multitude of small problems which arise and which could lead to friction and dissatisfaction. In recent years we have noted an increasing tendency to employ as Medical Directors, physicians—i.e., doctors whose training has been primarily in medicine—rather than surgeons, as formerly. This we regard as a beginning awareness on the part of industrial management that disease, both occupational and non-occupational, is economically and otherwise more important than injuries. Not yet completely clear to management is the need for physicians who are trained in occupational medicine as a specialty. With the advent of completely new processes involving new chemicals, plastics, radioactive materials, and the like, a knowledge of toxicology is every bit as important as diagnostic acumen; and changing concepts of insurance and social benefits make administrative ability and a familiarity with the objectives and purposes of commercial enterprise even more valuable than skill in therapeusis. And now, having said, in effect, that the physician is the most important part of the medical service, I am tempted to say that if there is anyone more important than the physician, it is the nurse. Obviously, she has more direct and more frequent association with both supervision and workers than does the physician. It is she who puts into untimate practice the entire policy and procedure of the medical service. It is unfortunate that in so many cases, especially where medical supervision is less than full-time, the nurse is placed in a very difficult position. Too often she has no specific written directives to help her interpret company and medical policy. What is worse, she is very often expected, even urged, to do more than her professional training and the limitations of

law permit. Summarizing the findings of past surveys, I think it can be shown that a properly designed program can be counted upon to give all of the good results which have repeatedly been claimed for a medical service, and that it will amply repay its cost. Finally, I would point out that a survey of medical practice and procedure, with the recommendations resulting, is of absolutely no use, and will serve no purpose, if it is not implemented and put into practice.

Medicine and Management

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IN THE vast majority of industries, management-Medical Department relationships are good—in fact, excellent—based upon intelligence, friendliness and understanding. In some instances, however, these characteristics cannot be applied to the fullest. Basically, in bringing these questions into the situation, we are practicing preventive medicine. Misunderstandings are symtomatic of something wrong in the structure of human relations. Perhaps they point to only a simple break in communications or to just plain misinformation. On the other hand, they may be more serious. They may spell out a personality conflict or overzealousness in one's position. They may even indicate over-ambition and with it an abnormal desire to usurp more authority than is one's right. We feel it worthwhile, then, to clear the smog by open discussion across the table in an honest sincere way. Thereby, we might help to dissipate prevailing ills and prevent their future occurrence.

What are some of these symptoms to which we have alluded? I would like to hang out the "all is not well" sign in the following instances:

1. *In the realm of staff status*: Where the Medical Department being historically last in the organization has to *fight* for its position. Where it is not a distinct department of itself. Where the Medical Director has too low a place on the staff and lacks vested authority to make proper medical decisions. Where the department is subordinated to the whims and decisions of non-medical heads—especially when these decisions are medical rather than administrative in character. All of these may cause friction and thereby inhibit smooth functioning of the department.

2. *Pressure tactics can be factors*: I am confident many could cite instances where an applicant has been found physically *unfit* for the job only to have *opportunism* enter upon the scene. The physician is now asked to disregard what is ordinarily considered good employment practice. Solely because of a special skill held by the applicant, physical unfitness is asked to be ignored in the hiring. Or, in the same category, but conversely, the personnel department has knowledge about the background and characteristics of an applicant, not medical in nature. He is known to the personnel department as a troublemaker, a chronic malcontent. They do not want him employed because he is apt to be a thorn in the side for the industrial relations department. Let it be emphasized right here—the Medical Department is *not* and *never should be* considered a hiring agency. The physician passes only upon the physical qualifications of the applicant. He does not hire, except in his own department.

3. *Disregard of medical advice*: Consider the instances within your memory where a man has been examined and certain restrictions put upon his job placement. I know this is a debatable question. Some say it is none of the physician's business where an applicant is placed, that it is strictly the prerogative of management. Maybe that is the policy prevailing in some companies. But certainly, in my opinion, the physician is giving medical advice which, for the benefit of the company, as well as the employee, should not be ignored. Then comes the accident. For the first time the Medical Department now learns the employee has been working on a job for which he has been totally unfit just because the Medical Department had not been consulted as to a change in the employee's job. An accident might have been avoided had strict adherence to medical precautions been followed. Maybe the reason for this occurrence was in communications, but again it could represent another instance of opportunism on the part of management—this time even the foreman.

4. *Interference with patient-physician relationship*:

(a) It is said that in some companies the physician is discouraged or even prohibited from discussing with the applicant the results of his physical findings. The applicant is advised that this information can be forthcoming *only in the employment office*—personnel or the like. This to me should not be. As a physician, I believe that the doctor's first duty is to the one examined. Who is more qualified than the doctor to discuss his findings with the man who is examined? If the man has a physical weakness, he should be told as a matter of medical duty, so that he might consult his family doctor. *This is good preventive medicine.* Likewise, if he be physically fit, he should also be told. I reiterate—*hiring is not the job of the physician—his is to practice good medicine—preventive or otherwise.*

(b) In some cases, too, without the permission of the employee, the doctor is asked by someone in management regarding the employee's physical infirmities. Here the physician is definitely asked to breach the ethics of adherence to strict patient-doctor relationship.

Now, I am not imputing wilful disregard of ethics in these instances. In most cases, they are due just to plain *not thinking*—a non-realization of what is being asked of the doctor. Certainly, I believe that when the significance of the request is pointed out, the right thinking individual, be he from personnel, from industrial relations, from shop, or from other departments, will accept the situation. Rarely should resentment occur.

(c) To cite another roadblock in Medical Department functions: What would one say and do if the physician insisted upon being in the room—say of the personnel, safety or the employment department while an applicant is being interviewed as to his personnel record, wages, etc. The answer is obvious. And yet, there are cases, fortunately isolated, where a *representative of management insists upon being present during the physical examination of the applicant.*

5. *Policy-making functions*: Let me say a few words regarding company policy making. I presume that in most companies, policy making *per se*, is in the hands of some representative of management, *empowered by top management.* It seems to me, however, that company policies are made only after the proper groundwork has been laid by conferences between different departments and levels of manage-

ment, and after due considerations of their ramifications and significance. *Arbitrary attitudes should never have a place in any policy decisions, be they medical or otherwise.* Certainly you would not expect policies to be changed in an engineering department without prior consultation with the proper engineering head. By the same token, policies, which are strictly medical in nature—and not administrative—whether they be initiated or changed, should never function without prior consultation with the Medical Department. Only when such consultation has been made *is there any certainty of understanding* and equally a certainty of *avoiding* misunderstanding and resentment.

While these incidents do affect good relationships, surely they are not momentous in import. They represent neither a cancerous growth nor even a benign tumor upon an otherwise healthy body. Nevertheless, they are definite irritants and they are disturbing. They can be both prevented and eliminated.

At no time in the history of industry have relationships between the Medical Department and management been more friendly or more intelligent. There is a bond in their actions, a unanimity of purpose—the commonweal of the worker and the company.

Medicine and Management

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PERHAPS the best way for me to approach this discussion of the relationships between the Medical Department and management will be to emphasize the distinction between a company physician's responsibilities as head of the Medical Department and his responsibilities as adviser to management on medical questions. An extreme example of this distinction can be found in the U.S. Army. No doubt many of you are familiar with the present organization of an infantry division in which the division surgeon is a member of the special staff of the Commanding General. Although the division surgeon is provided with a staff of his own, namely, an executive officer, a medical inspector, a veterinarian and a neuropsychiatrist, the fact remains that his responsibilities are limited to staff functions. All other medical troops in the division are under the direct control of the commanding officer of the unit to which they are attached. Evidently the Army has found it expedient to make a clean separation between the staff functions and the line functions of its medical officers.

No such separation exists, so far as I know, in industry. In most large companies the law department functions as a staff organization almost entirely. On the other hand, the Medical Department functions as a line organization when rendering medical service to the employees within the plant and as a staff organization when advising management on medical problems. Therefore, the physician in charge of the Medical Department must have both departmental status and professional status.

There are several ways in which professional status can be acquired in the plant. The industrial physician may earn it by demonstrating skill in treating industrial injuries. He may win the respect of the employees by the fairness of his decisions on questions of temporary disability or total disability, by early diagnosis of incipient disease, and by accurate prognosis in difficult cases. But let it not be forgotten that management can help in several ways: First, by allowing the company doctor to use his best judgment in deciding whether to treat injured employees himself or to refer them to the best outside consultants and surgeons he can find. Second, by encouraging the company physician to give fair and liberal estimates on claims for partial disability. Third, by encouraging him to practice preventive medicine in the plant. And fourth, by seeking his technical advice on medical questions as they arise in the course of business.

But there is another side of the picture. The physician must not risk his professional status in the plant by attempting surgical procedures that are beyond his experience or training. Nor should he engage in outside activities which might be considered by some to be inconsistent with his profession. On the other hand, management should not require a company physician to investigate accidents. His job is to take care of the injured man, not to inquire as to whether he was careless and whether he disobeyed safety instructions. Management should not expect the doctor to give routine testimony for the company and against the employees in hearings under workmen's compensation. Management should not ask the doctor to render home care in non-compensable cases nor to investigate cases of absenteeism where no report of sickness has been received.

When it comes to administrative responsibilities, the Medical Department should be treated much as any other department. As head of his department, the company doctor should be required to make regular reports on medical activities. He should be given an annual budget and quarterly reports on the unexpended balance to help him to live within it. He should prepare job-analyses of all positions within the department. He should train replacements for all key positions and, most important of all, he should initiate all recommendations for salary adjustments.

Such a program may be burdensome at times but the results will be worth all the effort it takes. Physicians may dislike such administrative chores but the time to learn them is when the department is small. In my opinion, there is no better way to build up the morale with the Medical Department than to make it a department in every sense of the word. After all, clear-cut lines of responsibility go far toward preventing misunderstandings. As Robert Frost says: "Good fences make good neighbors."

To conclude: Relationships between the Medical Department and management must be based on mutual confidence and respect. To live up to what is expected of him, the company physician must have both departmental status and professional status. Management might be well advised to: "Make it a Department and keep it Medical."

Medical Testimony in Compensation Cases

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THE predominant problems in workmen's compensation are medical rather than legal. It has been estimated that workmen's compensation administra-

tion is about 80% medical. Obviously, the physician is a vital part of the workmen's compensation system. The satisfactory operation of the workmen's compensation system depends largely upon competent and adequate medical treatment of injured employees, the prompt furnishing of accurate medical reports on injuries, and the giving of medical testimony at hearings on controverted claims.

It is the duty of the treating physician to see that the injured employee receives all the medical care necessary to restore his earning capacity as quickly as possible, and reduce the permanent disability to a minimum. The physician must also furnish complete and accurate reports promptly so that any cash benefits due can be paid on time. The physician must also determine as impartially as possible whether the condition he finds is due to the alleged injury, whether it is disabling, when the employee is able to return to work, and the extent of the permanent partial disability, if any.

Those medical services are essential to the successful operation of the workmen's compensation system. They require little, if any, direct contact by the treating physician with the agency administering the workmen's compensation program unless there is a controversy.

The majority of the controverted cases involve questions of fact rather than questions of law. Most of the fact cases involve a medical question. Is the employee disabled? Is the disability due to an accidental injury or occupational disease? Has a preexisting condition been aggravated? Is the employee able to return to work? What is the extent of the permanent disability, if any? The physician selected by the employer to treat the employee should take a realistic approach to these problems and consider the policy of the Commission or its medical advisers regarding them. If he does, controverted claims can be reduced to a minimum.

Much unnecessary litigation in the area of permanent partial disability could be eliminated if the treating physician would know and consider the methods the Commission or its medical advisers use in evaluating the type of injury involved. It is natural that the treating physician should be proud of the excellent result obtained and be inclined to conclude there is no permanent disability. He is probably right in most of the cases. We know that a deformity need not necessarily mean disability. It is disabling only when there is interference with function. We also know that a deformity, though it might not interfere with the function, is frequently the basis of an award for permanent partial disability, even though some physicians may indicate no disability. There may be no disability to the treating physician, but that may not satisfy the Commission. When the extent of the permanent partial disability is the only problem, the treating physician should evaluate the claim for compensation purposes in line with the Commission's policy so the case can be handled administratively without litigation. Fortunately, only a small percentage—5% or less—of the total cases are litigated.

In the controverted cases where the employer or insurance carrier selects the treating physician, it is often advisable to have the treating physician give testimony at the hearing.

A physician probably does not remember the details of a case that he took care of some months or even years ago. A physician who treats industrial injuries must make a complete and accurate permanent record of each case. Otherwise, he will not be able to present the medical facts when he is required to give testimony. The record should include the history as given by the employee in as much detail as possible. The history should indicate what the employee was doing and how he claims he was injured. The history should be in the positive and not in the negative. The statement, "No history of injury" is worthless. There is a beginning to every symptom or condition. The history the employee gives regarding its onset should be recorded. The past history also should be obtained and recorded. The record should include the site of the injury and all objective findings. If there is muscle spasm, record it. The diagnosis should be based on medical findings. The physician should not rely on the employee's statement, such as, "I strained my back lifting," as the basis for a diagnosis. He should make his own diagnosis, and not let the employee make the diagnosis. If x-rays are taken, the film should be marked, retained, and the interpretation recorded.

The physician should record his opinion regarding the cause of the condition and his reasons for the opinion. It should be a medical opinion and not a legal opinion. The use of the legal terms, "compensable" or "non-compensable," should be avoided. The physician should review the record before he comes to the hearing and use the record at the hearing. He should not hesitate to show the record to the hearing officer and opposing counsel when asked. Generally, the hearing officer is impressed with a neat, complete and carefully prepared record. The record can be the determining factor in the decision.

If the treating physician is not selected by the employer or carrier, or the claim is controverted in the original instance, then a physician other than the treating physician must be selected to examine the claimant and give testimony at the hearing.

Who should be selected as a medical witness? First, he should be an experienced practicing physician who is capable, truthful, and has an excellent reputation among his colleagues. Second, he should have some experience as a witness and be able to withstand the vigorous cross-examination to which he may be subjected. Third, he should be a specialist when the medical problem falls within a recognized specialty, as the hearing officer and the Commission usually give considerable weight to the testimony of a specialist. The so-called professional witness, or the physician whose practice is almost entirely limited to giving testimony in personal injury or workmen's compensation cases, should not be used. It is questionable whether a medical witness should be selected because of his skill alone as a witness or his ability to express a favorable opinion. His testimony may be of doubtful value as an experienced hearing officer may give it little credence. The medical witness should be able to use such language that the non-medical hearing officer will be able to understand its medical significance. We must remember that the purpose of medical testimony in a compensation hearing is to aid the hearing officer in deciding the medical problem involved. That purpose will not be realized unless he understands the language used by the medical witness.

All the facts in the case should be reviewed carefully with the medical witness before the day of the hearing. The witness should be apprised in advance of the areas in which he can expect to be cross-examined. Medical men are busy, so should not be required to sit around the hearing room waiting to

testify. The witness should be on call and called when it is time for him to appear.

What do the hearing officer and Commission expect of a medical witness? They expect a medical witness to limit his testimony to history, medical findings, opinion. They do not want the opinion influenced by partial disability. They expect a truthful opinion based on medical findings and medical facts, not on sympathy for the employee and his family or the desire to help either party to the controversy. They want logical reasons for the opinion. They evaluate the testimony on the basis of the reasons for the opinion. They do not want the opinion influenced by erroneous assumptions of what the law is or should be. They do not want the medical witness to try to decide the ultimate question of liability.

The inherent weakness of medical testimony is the fact that it is mainly opinion evidence. Therefore, there can be as many different opinions as there are medical witnesses. There can be honest differences of opinion and there can be dishonest differences. Sometimes there is no established medical basis for the opinion. There is some truth to the trite statement that medical witnesses are called in not to give but to make up medical testimony. The quality of medical testimony has been the subject of much debate. Undoubtedly some form of policing of medical testimony by the local medical societies would help to eliminate some of the incredible theories that are developed by some medical witnesses.

The physician, either in treating the employee or as a medical witness, should not try to be a compensation claims adjuster. He should not assume an attitude resembling that of a retained advocate. He should avoid the temptation to be a lawyer. He should not worry about whether the case is compensable. He should not try to decide the case. Let the attorneys, the hearing officer or the Commission decide what is or is not an accident or a compensable injury. They can lose their value as treating physicians and as medical witnesses when they attempt to become so-called medicolegal experts. In that category, sooner or later their opinions and testimony become colored by their legal understanding or misunderstanding and possibly by their interest in the result.

Adapt or Be Taken Over

IT IS a well known biological fact that only those animals and plants which have a high degree of adaptability survive. This world may not be the best possible of all worlds, but it is the only planet known to us that can support such a system of life. Lincoln Barrett, in his new series, "Man Inherits the Earth," makes this statement: "Alone among the hordes of living creatures that populate the earth, man has the faculty of self perception." It has been authoritatively stated that there are some 160,000 physicians engaged in the private practice of medicine in the United States today. This is approximately one-tenth of 1% of our population. The adaptability of this (our) small portion of the total population to economic, political and social changes is a must; we either adapt or we become extinct, as the dinosaur or the mastodon of old. When I received my medical degree in 1936 I had a fixed idea that any doctor who engaged in the practice of industrial medicine was lowering himself and the profession. But since then I have become disillusioned, as only last spring I attended a banquet honoring one of our ethical and respected state doctors who had been elected President of the industrial doctors of the United States. I think it is safe to say that now we not only recognize industrial medicine as a legitimate part of the practice, but most of us are making some efforts to participate in its benefits. That is a change that has been brought about in the last 20 years. Insurance has also brought a change in the practice of medicine that knows no end, and we either adapt ourselves to it or we will be taken over by the state or some form of society. Within the last few years many lay health organizations have come into existence. One of the earlier of these was the Tuberculosis association, now we have the Cancer, Polio, Heart, Rheumatism, and other associations, all of which are justifiable, each having a heavy percent of lay personnel. The medical profession, as a whole and as individuals, must take part in these associations lest they get out of hand, much to our discredit. Last, but not least, we have a problem that is nationwide and it is especially a problem of county medical society groups. The general practitioner, the specialist, the part-time specialist, the older doctor who is used to doing in one way, and the younger doctor who is trained in a different economic light. Chiefly we must adapt to each other before we face the world to make the necessary social and economic adaptions. Our position is far too precarious to "spike" at each other because of minor or unimportant differences of opinion.

—MARK D. HOLCOMB, M.D., in "The President's Page, *Garfield-Kingfisher County Medical Society Bulletin*, Enid, Oklahoma.

Early Diagnosis of Disease at the Place of Work

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THE MEDICAL DEPARTMENT of Phillips Petroleum Company in 1948 launched an intensified periodic health examination program for all employees, the objectives being to:

1. Discover disease in its incipiency or remedial stage.
2. Determine any marked deviation from previously established health status.
3. Determine emotional stress associated with employment.
4. Determine if health disorders found at a previous examination have been corrected.
5. Determine if the ordinary aging processes are being accelerated, and, if so, why.

Where we had medical offices staffed with full-time company personnel, including qualified physicians, no particular problem was encountered. In certain other working areas, however, such as drilling operations, booster stations along pipe lines, and seismograph camps, where the employees were few in number and at times migratory, we were confronted with a real problem. As a rule, it was impracticable to send these employees 50 to 100 or more miles to an established industrial medical clinic for this type of examination. And, it is rather difficult to interest the local private practitioner in doing periodic health examinations, even though he may be the company medical consultant for a particular area. To him, checking over a person who is apparently well—one who is working every day—might seem unnecessary. Consequently, this kind of examination, completed by such a busy doctor, is usually of the "screening" type and may be of little real value in detecting health problems in their incipiency.

Unit and Personnel

SO, SINCE Mohammed could not come to the mountain, arrangements were made to take the mountain to Mohammed. This could be achieved only through a health evaluation clinic on wheels. Our first mobile medical unit was set up in a Spartan Trailer, put into service in January, 1948, and served its purpose well during our early experimental years. Its staff consisted of one full-time physician and one full-time medical technologist (Fig. 1).

Two years ago this medical trailer unit was replaced by a more modern, up-to-date bus-type unit using the same staff (Fig. 2). The unit, constructed by Medical Coaches, Inc., New York, as may appear, is a rugged piece of machinery; however, it is relatively easy to manipulate on the highway. Clearance is enough to allow it to move readily over roads and lanes that are off the beaten path. The unit itself is 33½ feet long and is divided into two separate sections: the cab, and the clinic area (Fig. 3). The clinic portion, which covers 193 square feet, is further divided into three compartments: the back room is the doctor's office for general examination work and counseling; the center room is the laboratory and developing room; and the forward room contains the x-ray, electrocardiograph, visual acuity testing equipment, refrigerator, scales, and general office set-up for the technologist (Figs. 4 and 5). The unit is equipped with a common system for heating and air conditioning. A 300-gallon fresh

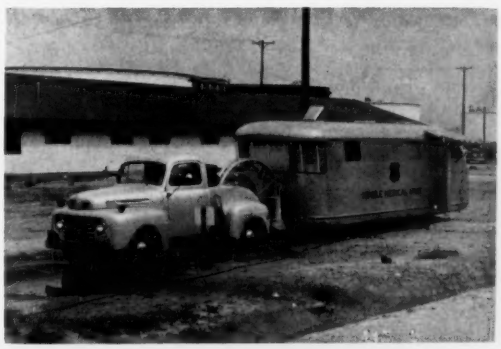


Fig. 1.

Fig. 2.

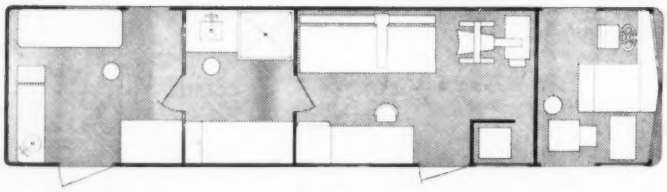


Fig. 3.
Floor plan.

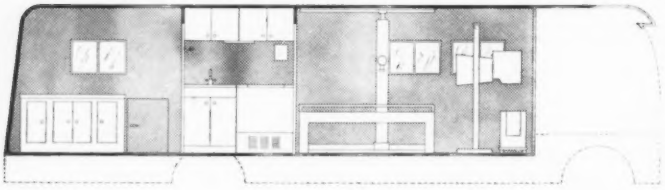


Fig. 4.
Left inside view.

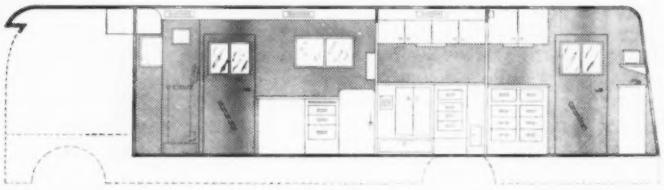


Fig. 5.
Right inside view.

water tank, with connected water heater, makes it possible to have hot and cold running water in the back and middle rooms. A 30-kw generator, trailed behind the bus in transit, furnishes electricity for all the electrical appliances in the unit, including the 200 ma x-ray machine. The overall length of the unit, including the trailing generator, is just under 45 feet, the length limits of such motor vehicles and trailers established in many states by the Interstate Commerce Commission. An automatic auxiliary 3 kw power plant located in the front cab furnishes electricity for the refrigerator and lights when the larger generator is not in operation.

The cost of this complete unit is in the neighborhood of $50,000. As will be appreciated, this cost will vary considerably in accordance with medical equipment. For example, in round figures, the x-ray equipment in this unit runs about $16,000. Several thousand dollars can be saved by installing a 100 ma unit; however, the saving in taking 70-mm. photofluorograms using the 200 ma machine, as against the same number of 14 x 17 chest films which are necessary when the 100 ma machine is used, will, in itself, more than make up the difference in original costs of the two types of equipment in less than two years' time.

Procedure

A CAREFUL itinerary is always worked out so that all installations due for a visit know well in advance when to expect the mobile unit. In order to maintain a closer schedule, the field examiner has a list of "contact men" for each area and keeps them posted as to time of arrival. This enables each department to schedule its employees, who desire the examination, without hardship and interruption of daily routine.

Every examination is completely voluntary and includes a thorough physical inventory and a careful medical history, allowing time, if needed, for ventilation of emotional problems. The laboratory work includes urinalysis, serology, blood type and Rh factor determination, hemoglobin level when indicated, a 70-mm. photofluoroscopic chest x-ray, and an electrocardiogram, or heart tracing, on all employees 50 years of age or older. The heart tracing is also done if there is any other reason possibly to suspect heart disease, regardless of the employee's age. Other x-rays are made of backs, extremities, etc., when deemed necessary by the examiner. There is no set time limit for each employee's examination. With younger people, it may be possible to complete this review in 15-20 minutes; others may require as long as an hour. In each instance the physician always takes sufficient time unhurriedly to discuss findings and advise the employee in regard to any health problem found.

As with the entire examination, no component is compulsory, and though urged to take advantage of the complete examination (which the majority do) an employee may elect to omit a particular feature. In other words, he is not denied the examination should he, for example, request that his blood not be drawn or that a heart tracing not be taken. A notation is made, however, that certain procedures were refused, so that when the medical information gathered is reviewed finally, the examiner will know that certain parts were purposely omitted and not overlooked, and can give a fair appraisal on the data presented.

All information forms are completed in duplicate in the mobile unit, and forwarded to the home medical office in Bartlesville, along with electrocardiograms and x-rays. The duplicate of each examination, along with clippings from the electrocardiogram and the x-ray report, is filed geographically so that on the next "go-round" this record may be easily available for the examiner when he returns to the same area. The Medical Department is notified of transfers and terminations so that these geographical files are always up-to-date.

When all the laboratory and clinical data are assembled in the employee's file, it is reviewed by an internist, and each employee receives a confidential report of his health status. In the case

of borderline or definitely abnormal findings as revealed by his medical history, physical examination, or laboratory work, he is informed as to the general nature of the deviation from normal and advised to consult his personal physician for further study and treatment, if such is indicated. He is also advised that only at his request can a report be sent to anyone else, including his doctor. Usually, he requests the findings be sent his physician, and this is done in detail, including the loan of any x-rays.

A record is kept of the date an employee is advised regarding a finding that could be potentially serious. The employee's name is entered on a calendar for future call-in, the time lapse varying with the urgency of the finding. When satisfactory reply is received, and liaison is established with the personal physician for proper investigation and care of the abnormality, the employee's name is removed from the calendar. If his name does turn up on a certain day, his file is pulled and efforts again made to contact him regarding proper follow-up and care by his own doctor. This communication is sent directly from the central medical office to the employee, in a highly confidential manner, and is not divulged in any way to his department or supervisor.

Occasionally health problems are discovered that warrant modification of an employee's work or a decided change in his job classification. When this occurs, and after the family physician has confirmed the diagnosis, the situation is thoroughly reviewed with the employee involved and his consent obtained before any recommendations are made to his department. The primary purpose is, of course, to keep him working at a job that is safe to himself and others. Transfers effected in this manner may be temporary or permanent depending upon whether the medical problem is remedial. Once the employee understands all the implications, he is willing, almost without exception, for his department and the Medical Department to discuss the job changes indicated for the protection of all.

After health problems have been corrected and the employee returns to his optimal health status, it is recommended that he be permitted to continue in his usual job.

No definitive treatment is extended through this program. The cost of medical care for personal health problems detected at the time of the periodic examination is borne by the employee. Of course, defects found that are job-connected are handled in accordance with workmen's compensation regulations.

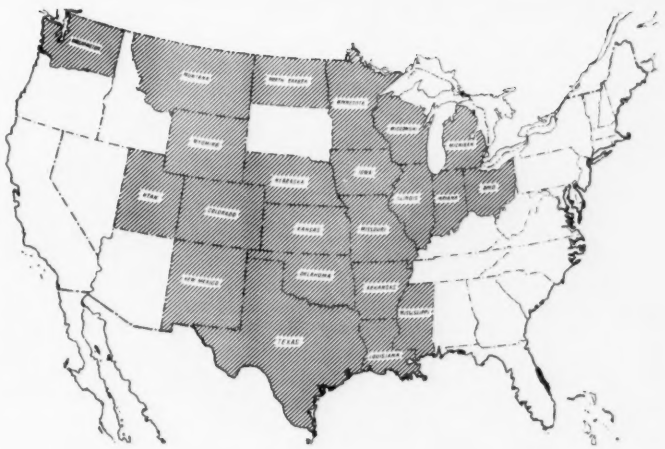


Fig. 6.
States covered during periodic examination program, 1952-54; total mileage, 16,306.

Results

IN THE beginning many of our older people regarded this program as a part of a company spying system, and even a method by which some of them could be eliminated from their jobs. To-

SUMMARY OF PHYSICAL FINDINGS OF EMPLOYEES EXAMINED IN THE MOBILE MEDICAL UNIT DURING ONE CIRCUIT (JUNE, 1952—SEPTEMBER, 1954)

Alcoholics	2
Allergy:	
Asthma	29
Hay-fever	35
Other	19
Back	76
Blood abnormality:	
Anemia	15
Leukemia	1
Other	0
Cardiovascular:	
Blood pressure	290
Valvular disease	23
Coronary disease	99
Other	59
Cysts:	
Pilonidal	23
Other	9
Dermatitis:	
Industrial	9
Other	60
Ears:	
Structural defect	62
Hearing defect	94
Eyes:	
Structural defect	22
Vision	156
Other	7
Gall-bladder	44
Gastro-intestinal	188
Genito-urinary:	
Kidney	4
Bladder	0
Prostate	52
Urine	44
Other	11
Glandular	7
Rectal:	
Hemorrhoids	78
Fistula	7
Fissure	2
Other	14
Hernia	94
Joints:	
Arthritis	15
Non-inflammatory derangements	16
Other	62
Liver	6
Lungs:	
Tuberculosis (Active)	7
Other	81
Metabolic:	
Thyroid dysfunction	10
Diabetes	19
Other	5
Miscellaneous	4
Musculoskeletal	26
Nerve disorders:	
Neurologic	17
Psychiatric	2
Nose	26
Obesity:	
W/associated disease	114
W/o associated disease	882
Sinus	4
Syphilis—(treated or under treatment)	31
Teeth and gums	262
Throat	15
Tumors:	
Skin	43
Mucous membranes	11
Other	25
Underweight	28
Varicocele	18
Vascular:	
Buerger's disease	4
Arteriosclerosis	1
Raynaud's disease	0
Varicosities	21
Other	5

day, we rarely encounter such feeling. The attitude of most of the remaining skeptics has shifted from either suspicion or mild curiosity to one of enthusiasm for the over-all program of the mobile unit. This is evidenced by the fact that in many areas we now are having 100% participation.

The voluntary cooperation and enthusiasm of departments and employees have resulted in discovery of many potentially serious medical problems and even more minor, but troublesome, ones. The table shows the health findings resulting from the last complete examination tour of the mobile unit. Most have been corrected or improved sufficiently to permit the employee to continue safely in his usual job. Even the more serious medical problems have been helped by aiding the employee to get proper medical care, with the result that he remains productive in some capacity, rather than a total loss for lack of proper medical evaluation in relation to his job.

Summary

PHILLIPS Petroleum Company has successfully used the mobile medical unit for the past seven years in its program of early diagnosis of disease at the place of work. While the program may be considered as one of case finding in the individual, it still remains that, as a rule, the earlier a diagnosis is made, the more amenable the disease is to cure or control. That this program is needed is evidenced by the number of medical problems detected in individuals who were working every day and seemingly in good health. The great majority of these conditions were discovered in their incipiency, and subsequent medical treatment was effective without unavoidable absenteeism.

As one might expect, however, a few severe cases were found which warranted loss of time from work for proper and adequate care. It might be of interest to note that on each successive tour of the unit, considerably fewer severe cases are uncovered.

In this field health program, just as in all of our company medical activities, medical ethics are closely adhered to. The doctor-patient relationship must be maintained, and employee confidences must be respected if this work is to serve its intended purpose.

In the same manner, the prerogatives of the family physician are to be preserved. As a part of our company health program, this preventive and diagnostic work is not in competition with the local private doctor when properly handled, but rather is an adjunct to his practice.

Success is dependent upon the willingness of all involved to cooperate—the employee, the union, management, and medicine. One without the others would be lost in this important effort.

Preservation by Radiation

ONE AREA of utilization of spent atomic fuel elements is that of food preservation. The Army has a tremendous program under way. The practical application in this field alone could revolutionize the entire home. There are a few disadvantages, since 2M rep required to sterilize food almost always causes a change of appearance—bleaching, texture, flavor, odor. These changes are diminished by irridation *in vacuo*, in an inert atmosphere, by freezing, or by additives which prevent oxidation—an inhibitor, as ascorbic acid, or extractives, to remove undesirable features. Not all foods react similarly, but preservation by radiation may become big business. It may outmode canning or freezing of meats, fruits, and vegetables. If Mrs. Housewife takes to the notion of lettuce kept in a plastic bag on a shelf for 30 to 60 days or meat kept wrapped in transparent plastic at room temperature for months before serving, considerable change of viewpoint will be required. It may not be accepted. Nutritionally, the quality of food is apparently uninjured. All foods thus far tested have undergone extensive tests before human trial. Animals have been fed flesh irradiated with gamma or x-ray *in vivo* as well as processed meats and no deleterious effects noted. Trichina-infested pork is made edible, and, likewise, other food vermin, pests, and molds are eradicated. For merely increasing "shelf-life," a small dosage, 100-500,000 rep, is required. The present cost is one-half to seven cents a pound.

—From "Radiation and Industry—Nursing and Health Aspects," by EUGENE L. WALSH, M.D., Medical Director, International Harvester, Chicago, at 43rd National Safety Congress, October 17-21, 1955.

Unstable Back in Industry

N. GILLMOR LONG, M.D., Resident Surgeon, and KENNETH STOTZ, M.D., Surgeon
Lumbermens Mutual Casualty Company, Chicago

THIS term "unstable back" is not a recognized disease entity and does not appear as such in the Joint Armed Forces Statistical Classification and Basic Diagnostic Nomenclature of Diseases and Injuries, or in the International Statistical Classification of Diseases, Injuries, and Causes of Death. Careful review of the voluminous literature based on spine and back diseases and injuries, discloses no mention of this term. Most etiological studies of backache and sciatic pain include protrusion of an intervertebral disc, spondylitis, scoliosis, fibrositis, coccygodynia, osteoarthritis, etc. Yet the term "unstable back" is repeatedly and increasingly being used at Board hearings to describe an end result, or as the causative explanation for a "weak back" as to which the slightest degree of trauma is the alleged justification for a compensation award.

There is actually no pathological or anatomical basis for such a contention in most of the cases. The term is eagerly seized upon by the compensation lawyer in much the same manner as is the term ruptured disc—lately being called fractured disc—as a fulcrum to gain the point that the client will never be able to do any heavy work, and, if the livelihood is based on laboring work, to secure an adequate settlement. It would be interesting to follow up these cases after compensation settlement to see how many return to full-scale laboring work with little or no evidence of the symptoms upon which the settlement was made in an honest attempt to do justice to the claimant.

In a National Safety Council release of October 19, 1955, the seriousness of the Industrial Back Problem in general was emphasized by giving a year's experience of the Commonwealth of Pennsylvania with over 6,900 back injuries reported, amounting to nearly $1,500,000.00 in compensation payments with more than 6,800 days lost from work. In the light of these statistics, every attempt should be made to arrive at a common denominator of terms used in describing "industrial" back pathology and discarding obsolete, vague, ambiguous terms such as "unstable back."

WHAT constitutes an "unstable back?"

To many practitioners the term "unstable back" is a waste-basket term applied to chronic back cases in which the x-rays show minor variations from normal. We have often seen cases labeled "unstable back" showing only the common congenital deformity of the 5th lumbar with irregular facets, etc. Certainly one cannot pin a secondary fibrositis or spondylitis upon an innocent defect of this type which, like the functionally perfect set arm, shows an imperfect x-ray "reduction." Recently we examined a 64 year old laborer with a marked spondylolisthesis and secondary "hollow-back" in which we could easily place a couple of fists, yet this man has done heavy steel work for 15 years, and is now coming in for a hernia repair. Is this a case of "unstable back?" From an x-ray standpoint, yes; but functionally, no. There is actual back motion between and around the vertebral discs, in the zygapophyses, and in the sacro-iliac joints.

Years ago, before Mixter and Barr did their monumental work on disc pathology, the term sacro-iliac sprain or disease was the vogue. This has lately been superseded by the disc, and now in certain areas if the disc investigations prove fruitless, the indefinite term of "unstable back" is used to explain away the symptoms of a sciatic syndrome (now falling into disfavor as a diagnostic entity) along with various pains secondary to a myositis or common back sprain.

Recently one of us (N.G.L.) was asked before the Industrial Accident Board to explain what would be considered an "unstable back." This could not readily be answered, but on reflection the following criteria were included:

1. Definite degeneration of the apophyseal joints.
2. Marked narrowing of the intervertebral spaces with sclerosing of the opposing surfaces.
3. Severe congenital defects at the site of disc surgery, with underdevelopment of the articular processes with almost a subluxation due to improper contacts.

Note that No. 2 usually signifies a degenerative disc rather than a ruptured disc—an entirely separate problem. This same list can also be used in consideration of the time-honored orthopedic problem of the value of spinal fusions in industrial backs. It is our contention that any of the conditions listed above will benefit from a fusion, in contrast to other so-called etiological factors responsible for an "unstable back." It has been our experience, after reviewing the files and examining over 1300 back cases in two years that, irrespective of the glowing reports of non-industrial disc and fusion cases, industrially the results are poor and it is seldom that a laboring man returns to full-time heavy laboring after a fusion or a disc fusion or disc operative treatment, regardless of the high quality of surgery, or the top qualifications of the surgeon doing the work. We are now preparing a paper

based on our experience with this question of the industrial back. It is a truly disheartening picture from the standpoint of results and lost-time costs eventually coming out of the pockets of all of us. We will not go into the details of the points enumerated above, as in all cases the diagnosis can readily be made on the x-ray findings, together with a history and physical findings compatible with the underlying pathology. We will admit that a spondylolisthesis with symptoms could readily be included in such a listing provided that the symptoms are sincere, backed up with repeated attempts at returning to work. There is no one who would dispute the claim of a patient with a metastatic spine, advanced degenerative osteoarthritis, symmetrical double primary S-shaped curved spine, severe 5th lumbar tilt, idiopathic primary dorsolumbar curve, hemivertebrae, poliomyelitis, paralytic curve, and the like, as having an "unstable back." These are out-and-out cases not requiring an expert to make the diagnosis, or a legal expert to prove their existence. It is the borderline case showing no demonstrable objective evidence to support the rather bizarre claims on the part of the claimant who has repeated an exaggerated story so many times to gain the sympathy of his family and the insurance carrier that he is firmly convinced of his own distorted contentions. Such patients require exhaustive studies, for any reputable physician is reluctant to label a case as a neurosis, or, in the army, label a man a goldbrick. We have all had the unpleasant experience of missing hidden pathology that was not discernible at the time of our original study. We do know that a congenital incomplete fusion of the 4th-5th lumbar vertebrae will not cause an "unstable back" in the full meaning of the term, even though impingement of the 1st sacrum on the post aspect of the 5th lumbar may cause secondary degenerative changes. However, a "jammed" back antedating an injury may result in a mild spondylolisthesis with symptoms severe enough to warrant a fusion. We are not impressed in court with an x-ray showing facets facing different angles, even with L5 being displaced downward giving the appearance of a hemivertebra and a slight rotation of the spine, for we have routinely x-rayed workers in heavy industry, showing similar findings with no complaints. Such knowledge will tend to minimize the exaggerated claims of trauma based on x-rays showing no marked abnormalities, along with good back motions and lack of spasm or atrophy. We believe that negative findings in a back case should always receive the studies necessary to rule out the occasional intraspinal tumor such as neurofibroma, vascular anomaly of the cord, meningioma, etc., before rendering an opinion that the patient, because of his continued symptoms of back pain, has an "unstable back."

SUMMARY: In the confusion as to the implications of the term "unstable back," we have attempted to crystalize my interpretation of this term which, like "surgical abdomen," has little scientific value as a diagnostic entity upon which to base a compensation claim. We have not included references, for there has been no paper written on the subject as such to my knowledge, and the usual "back" references would not be pertinent. The back problem is a major subject of contention in industry. If the term "unstable back" has a place in our medical and industrial nomenclature, then it should convey a definite significance to all examiners and lawyers. It is in an attempt to come to some basic understanding that this paper is submitted for consideration by all industrial physicians and surgeons.

As it is conceded that 90% of back cases can be successfully conservatively treated and handled as acute low back sprains it is suggested that before myelograms and discography (CLOWARD: *Am. Surg.* 142:190 (August) 1955) be used routinely for diagnostic purposes, needle electromyography studies be made. In contrast to the 12% margin of error and added dangers of setting up an arachnoiditis by irritative dye, needle electromyography is safe and reasonably accurate for evaluation. If the electromyographic studies are positive then the patient can be further protected by either discography or myelograms before submitting to a diagnostic or therapeutic disc operation. The authors are preparing a paper based on a reasonably large series of needle electromyographic studies of the acute low back pain industrial cases.

(20 N. Wacker Drive.)

Eliminating Hazards

IN ORDER to function effectively, the physician in occupational health has to be familiar with the problems of the industrialist—why he does things a certain way, what things affect his costs. Most industrial procedures are composed of a series of simple steps multiplied many times. The elimination of hazards must be developed in the same way, through simple steps multiplied many times, if possible, without delaying or otherwise increasing the cost of the operation. The workman must understand the reasons for complying with the safeguards. This is an educational procedure and also a problem in communication. It often starts with management passing down the information through the foreman and the steward to the workman. The union has to be convinced. Great patience and tact are required. Some knowledge of engineering and a sense of humor are of great value to the physician.

—From "Occupational Health Problems in an Industrial Society," by STAFFORD L. WARREN, M.D., in *J.A.M.A.*, December 24, 1955.

The Education of Physicians for Industry

The Pittsburgh Conference, December 6-8, 1955

UNDER THE JOINT sponsorship of the Association of Americal Medical Colleges, the National Fund for Medical Education, the Council on Industrial Health of the American Medical Association, the Council on Medical Education and Hospitals of that same association—and with some final sponsorship by the United States Steel Foundation, Inc., plus the facility sponsorship of the Mellon Institute—three days of sessions lately have been devoted to the matter of training for medical services to industry. Somewhat naturally, these discussions reached into two separate areas, but without segregation one from the other and with ultimate unity as to purposes. The first of these might be designated as the "professorial" or "curricular" appraisals and pronouncements leading to three panels contemplating education needs at these respective levels: the undergraduate, the graduate, and the postgraduate. While the fundamental academic need for education of industrial physicians is at the graduate level, an immediate, acute, and temporary situation has arisen in the field of postgraduate training, and in connection with the preparation of large numbers of industrial physicians lately designated as eligible to undertake the examination to establish qualification for specialty certification under the provisions of the American Board of Preventive Medicine.

The consideration of that immediate need is reflected in an excerpt from the panel's report to the Conference: "The committee considered the problem confronting those who have met the qualifications for admission to examinations by the specialty board in occupational medicine but might well be in need of further study opportunities, particularly in certain aspects of preventive medicine, such as epidemiology, biostatistics, etc. It was felt that this was a temporary need but one that should be met. The group was unanimous that anything resembling a 'cram' course organized primarily for the purpose of preparing candidates to pass examinations is to be avoided and actively discouraged. Candidates should be guided in procedures for preparing themselves to take the specialty examinations. It was believed that such guidance would require a minimum of a two-week course with the understanding that it would represent orientation and guidance for the physician to help him to pursue further his own studies of those areas in which his knowledge needs strengthening. It was felt that there would exist in this situation a need for instruction in some of the basic sciences of public health such as biostatistics, epidemiology, communicable disease, sanitation, and environmental medicine.

"Consideration should be given to publication of a list of suggested reading to assist those who are preparing to take the examinations. It was thought that it might be desirable to stimulate preparation of a series of articles dealing with those topics upon which the candidates will be examined and to include in those articles appropriate reading lists. It was further considered that graduate schools in the very near future should prepare themselves to meet this educational need and to furnish assistance to specialty board candidates. Because of the responsibilities of most industrial physicians, it was felt that few would be able to attend such courses of guided study for longer than a two-week period. For those able to participate in courses of longer duration, it was suggested that modification of some of the existing two-month courses might be needed to meet this specific need."

THE second portion of the Conference might be termed the "statesman's appraisal"—not that the two terms "professor" and "statesman" are necessarily divergent or incompatible. That assembly provided presentations by a number of outstanding industrialists, insurance executives, medical administrators, and labor union spokesmen all in appraisal of the workers' health needs, industry's stake in health conservation, community implications, and human relations. The trend of the discussions is disclosed in a few selected excerpts, always out of context but still revealing. These excerpts will follow reference to the major participants and their topics in this aspect of the program:

"Responsibilities of Society for Health in Our Industrial World:

"N. C. Kiefer, M.D.,—'Needs and Problems.'

"Problems of Industrial Health as seen by:

"The Industrialist—William Seymour.

"The Medical Administrator—Leo Wade, M.D.

"The Industrial Worker—Clinton S. Golden."

"Symposium: Medical Education and Industry:

"Robert A. Moore, M.D., President, Association of American Medical Colleges—'Medicine Tomorrow.'

"Harry W. Anderson, Vice-President in Charge of Personnel, General Motors Corporation—'Medicine and Manpower.'

"M. J. Rathbone, President, Standard Oil Company (N.J.)—'Our Debt to Medical Science.'

"Clifford F. Hood, President, United States Steel Corporation—'Industry's Stake in Rising Health Standards.'"

MR. SEYMOUR stated emphatically that: "industrial medicine did not grow in this country because doctors developed it. In fact, particularly in the early days, organized medicine fought against its development. It grew because industry needed it, wanted it, and went about getting it. This was a relatively simple task when the primary need was for curative medicine from the traumatic surgeon. But today's need is for an entirely different medical orientation. Not alone the treating of the sick and the repair of injuries but the maintenance of a more or less healthy group of employees in full working effectiveness. Medical schools produced well-trained traumatic surgeons to meet the scope of yesterday's industrial medicine. They are not producing the physician oriented to health maintenance, to meet the needs of today's and tomorrow's industrial medicine."

DR. KIEFER observed: "Somehow, the physician must become far more aware of his full relationships to a distinctly altered social philosophy and economic milieu in our present industrial world. First of all, he must learn that there is no turning back from the social changes in the industrial world of 1955 to the world in which his grandfather and father—perhaps he, himself, once practiced medicine. Today's physician must learn to adapt himself to the social and industrial world of today and, even more important, because today already is in twilight, of tomorrow. He must learn that industrial and other voluntary health programs, nevertheless, are based on an ideology of private enterprise and therefore are fundamentally sympathetic to his own desire to protect the private practice of medicine."

DR. ROBERT A. KEHOE, Conference Chairman, in his final summary emphasized that: "Preparation for full-time practice of occupational medicine, or industrial medicine, lies in the field of graduate education. It is unthinkable that we should even attempt, in undergraduate education, to train the specialists in this field. The full-time practice of occupational medicine requires more intellectual competence and a greater variety of knowledge than does any other field of medical practice. Now, that may be a shock to some of these gentlemen who are within the sound of my voice. I have no reservation whatsoever in insisting that that is the truth. The training, therefore, must be broad and sound. We are undertaking, in the course of a few years to cultivate a man with the skills of medicine and with the wisdom of social knowledge. And it is a difficult, and at the present time, an impossible task. The elaboration of the discipline by which that can be done best is in the process of being developed. It can be developed within our centers of medical education, if we have people who will put their shoulders to the wheel, recognize the nature of the job and, in their own devoted service to education and learning, assume this task. At present, the field needs charting and further development. There are, however, some trails that can be followed to a certain point, and these need to be followed by devoted teachers in more of our medical centers.

"This type of training, from its disciplinary and technical aspects, undertakes to create a union between the best of what we know in clinical medicine, of diagnosis and recognition of disease in its earliest stage, of understanding of the biology of disease, and of therapy, and much of what we have learned in the field of public health and preventive medicine through the techniques concerned with groups. These two sets of disciplines have been employed in two different universes; so generally have our schools of public health been so separated from our schools of medicine that they seem at times to be riding off in different directions. In industrial medicine they must come back together. This is the only means by which we can achieve, with our present facilities, the ease of knowing our way around both in clinical medicine and in public health, as these must be employed in the study of industrial populations."

IN MR. HOOD'S final estimate of the total situation appears this language:

"Considering the potentialities of industrial medicine, properly integrated into the business scene, one might say that an entire new world of understanding of the human element in industry conceivably is within our grasp. It will be the job of the medical profession and medical education to move us closer to that new awareness. Like the ancient Roman diety, Janus, who is familiar I know to the members of a profession that works daily with Latin, industrial medicine must be able to face simultaneously in two directions. It must look toward new horizons of medical progress and at the same time understand and be in harmony with the aims of industrial management.

"Perhaps the key to what we seek together is contained in a statement of Goethe, the great author and philosopher of the Nineteenth Century. When approached by a German youth, who sought his autograph, together with some profound advice which would outlast time itself, Goethe took up the young man's album, paused momentarily and then wrote: 'Let everyone sweep in front of his own door and the whole world will be clean . . .' "

THE National Fund for Medical Education, as a result of these conferences, in its endeavors to procure additional funds in the furtherance of all medical education, must have been heartened by the manifest espousal by management of occupational health as an essential in the successful operation of industrial pursuits. This same heartening process progressed through the statement by educational institutions of recognition that more and improved training must be provided in the field of occupational health although present-day facilities exceed ther utilization.

Industrial Medical Association

President's Page

LIKE ALL organizations of stature, the Industrial Medical Association maintains a full-time central office around which the day-by-day activities of the Association revolve. It is about this headquarters office that I wish to comment.

In 1941 the Association's headquarters office was established at 28 East Jackson Boulevard—its present location—in Chicago. At the same time, Dr. E. C. Holmblad was appointed part-time Managing Director. In 1946 the activities and work increased to the extent that the services of a full-time Managing Director were much needed, and, as good fortune would have it, Dr. Holmblad—having just previously relinquished his private practice—accepted the position. Certainly none was better qualified, for from 1931 until the time he accepted this post Dr. Holmblad served the Association in numerous capacities—among them as Director, Second Vice-President, First Vice-President, and ultimately President. On numerous occasions during this period he acted as Chairman of the Convention Program Committee.

With the able assistance of Mrs. Rita Packer, the Association Executive Secretary, and Mrs. Sittig, bookkeeper, and a stenographer, Dr. Holmblad has done a real job for the organization during the past 10 years. The primary purpose of the headquarters office is to be of service to all members of the Association—including all the many who are members through the Component Societies. As part of Dr. Holmblad's day-by-day activities, he greets all visitors and spends whatever time is necessary with those who call with particular problems; interviews and corresponds with members who are seeking a change of position in industrial medicine, with those who are in need of assistants, and with representatives of management regarding industrial medical programs and medical personnel; reviews as many scientific publications as possible in order to maintain a fairly current index of scientific problems pertinent to industrial medicine (this service is apparently becoming of greater importance, for in December, 1955, over 30 requests for reprint material and information on specific subjects were answered); at times during each year visits various medical schools in the interest of undergraduate courses in industrial medicine as well as to participate in postgraduate seminars on industrial health; visits plant Medical Departments and occasionally completes certification surveys for the Occupational Health Institute; composes the *IMA Newsletters;* and serves as Managing Director of the Annual Industrial Health Conference. It is of interest to know that recently Dr. Holmblad was appointed Chairman of the Medical Advisory Committee of the President's Commission on Employment of the Handicapped. A part of the detail work for which Mrs. Packer is responsible is the processing of applications for membership in the Association—now coming in at the rate of more than 100 per month.

Although the foregoing is only a thumbnail sketch of the activities in the Association's headquarters office, it will indicate that the office is a busy place. Indeed, its usefulness is reaching out so far and its importance is growing so fast that in the very near future additional office space and personnel are going to be needed.

We are proud to pay tribute to our Association's full-time staff, who are so efficiently looking after the business and affairs of our organization.

Kieffer Davis, M.D.

Association News

Industrial Health Conference
Philadelphia, April 21-27, 1956

THE Preliminary Programs for the 1956 Industrial Health Conference to be held in Philadelphia in April have been mailed. They outline a memorable schedule on the part of all of the five participating organizations. The highlights of the program of the Industrial Medical Association are as follows:

Tuesday Morning, April 24—Clinics

HAHNEMANN *Medical College*: "Cardiovascular Problems in Industry Which are Amenable to Surgery"—CHARLES P. BAILEY, M.D., F.A.C.S., Professor of Thoracic Surgery.

Jefferson Medical College: "New or Unusual Occupational Diseases"—HEINRICH BRIEGER, M.D., Professor of Industrial Medicine.

Temple University Medical School: "Handling of Injuries of the Upper Extremity"—JOHN ROYAL MOORE, M.D., F.A.C.S., Professor of Orthopedic Surgery.

University of Pennsylvania School of Medicine: "Demonstration of Certain Techniques Used in Health Maintenance Examinations"—KENDALL A. ELSOM, M.D., F.A.C.P., Professor of Clinical Medicine.

Woman's Medical College: "Detection of Disease by Survey Methods"—KATHARINE BOUCOT, M.D., Professor of Public Health and Preventive Medicine.

Tuesday Afternoon, April 24

OPENING Remarks. KIEFFER DAVIS, M.D., President, Industrial Medical Association.

Address of Welcome: "Interrelationships of Community and Industrial Health Services"—JAMES P. DIXON, M.D., Commissioner of Health, Philadelphia.

THE SAPPINGTON MEMORIAL LECTURE: "The Engineering of Consent"—EDWARD L. BERNAYS, B.S., Counsel on Public Relations; Adjunct Professor in Public Relations, New York University, 1949-1950; Visiting Professor in Public Relations, University of Hawaii, 1950.

SYMPOSIUM: *Communicating and Convincing*:

"Fundamental Factors in Interpersonal Communication"—FILLMORE H. SANFORD, Ph.D., Executive Secretary, American Psychological Association.

"Fundamental Factors in Persuasion"—WILLIAM E. ROBINSON, President, The Coca-Cola Company.

"Experience in Communication and Persuasion in Industrial Medical Services"—WILLIAM P. SHEPARD, M.D., Second Vice-President, Metropolitan Life Insurance Company.

Wednesday Morning, April 25

SYMPOSIUM: *The Optimum Time for Return to Work Following Various Major Disabilities*:

"Cardiovascular Disabilities"—JOHN J. THORPE, M.D., Assistant Professor of Clinical Medicine, NYU-Bellevue Postgraduate Medical School; Assistant Medical Director, Esso Standard Oil Company.

"Psychiatric or Neurological Disabilities"—RALPH T. COLLINS, M.D., Sc.D., Instructor in Psychiatry, University of Rochester School of Medicine; Medical Department, Eastman Kodak Company.

"Surgical Disabilities"—CLETUS SCHWEGMAN, M.D., Assistant Professor of Clinical Surgery, University of Pennsylvania School of Medicine; Assistant Secretary, American Board of Surgery.

"Military Experience with Return to Full Duty at Varying Intervals Following Specific Disabilities"—(Speaker to be announced).

Wednesday Afternoon, April 25

LUNCHEON—followed by presentation on: "The ABC's of Radiation"—THOMAS L. SHIPMAN, M.D., Health Division Leader, Los Alamos Scientific Laboratory.

SYMPOSIUM: *The Role of Nutrition in Health and Disease*:

"What the Physician Should Know and Do to Help His Patients Avoid Undernutrition and Overnutrition"—FREDRICK J. STARE, Ph.D., M.D., Professor and Head of the Department of Nutrition, Harvard University School of Public Health.

"The Role of Dietary Intake in Atherosclerosis"—EDWARD H. AHRENS, JR., M.D., Associate Member, Rockefeller Institute.

Annual IMA Business Meeting.

IMA Annual Banquet.

Thursday, April 26—Medical Section

JOINT SYMPOSIUM *with Surgical Section*: *The Initial Handling at Professional Level of Emergencies*:

"Medical Emergencies"—JOHN ERBACH, M.D., Clinical Associate in Medicine, Woman's Medical College.

"Surgical Emergencies"—JOHN M. HOWARD, M.D., Professor of Surgery, Emory University School of Medicine.

MEDICAL SECTION:

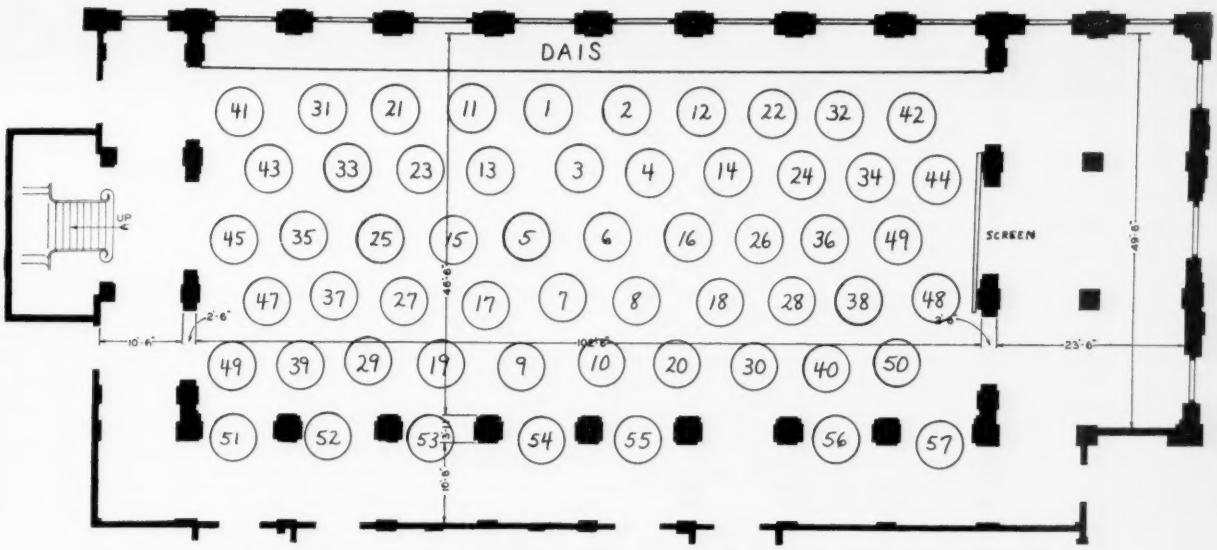
"A Review of Knowledge Concerning the Value and Achieving of Physical Fitness"—PETER KARPOVICH, M.D., Director of Health Education, Springfield College.

"Factors in the Production and Prevention of Fatigue"—LUCIEN BROUHA, D.Sc., M.D., Physiologist, E.I. du Pont de Nemours & Company.

LUNCHEON—followed by presentation on: "The ABC's of Noise"—CHARLES REGAN WILLIAMS, Ph.D., Associate Professor of Industrial Hygiene, Harvard University School of Public Health.

SYMPOSIUM: *The Effectiveness of Periodic Medical Evaluation in the Maintenance of Health and the Early Detection of Disease*: S. CHARLES FRANCO, M.D., F.A.C.P., Associate Medical Director, Consolidated Edison Company of New York. KENDALL A. ELSOM, M.D., F.A.C.P., Professor of Clinical Medicine, Director of University of Pennsylvania Diagnostic Clinic. RICHARD E. LEE, M.D., Assistant Professor of Clinical Medicine, Cornell University Medical College; Chief of Clinical Services, Medical Department, Standard Oil Company (New Jersey). JAMES P. BAKER, M.D., F.A.C.P., Medical Director, Greenbrier Clinic, White Sulphur Springs, West Virginia. O. T. MALLERY, JR., M.D., Director, University of Michigan Institute of Industrial Health.

PANEL DISCUSSION *on the Effectiveness of Periodic Medical Evaluation in the Maintenance of Health and the Early Detection of Disease*—DRS. FRANCO, ELSOM, LEE, BAKER, MALLERY. Moderator: JOHN ENG-



Floor plan of the Crystal Ballroom of the Benjamin Franklin Hotel, Philadelphia, as it will be set up for the IMA Banquet, Wednesday, April 25. There will be 11 additional tables in the balcony.

LISH DEITRICK, M.D., F.A.C.P., Professor and Chairman, Department of Medicine, Jefferson Medical College.

Thursday, April 26—Surgical Section

JOINT SYMPOSIUM *with Medical Section*: *The Initial Handling at Professional Level of Emergencies*:

"Medical Emergencies"—JOHN ERBACH, M.D., Clinical Associate in Medicine, Woman's Medical College.

"Surgical Emergencies"—JOHN M. HOWARD, M.D., Professor of Surgery, Emory University School of Medicine.

SURGICAL SECTION:

SYMPOSIUM: *Management of Facial Injuries*:

"From the Viewpoint of the General and Plastic Surgeon"—HENRY P. ROYSTER, M.D., F.A.C.S., Associate Professor of Surgery, University of Pennsylvania School of Medicine and Graduate School of Medicine.

"From the Viewpoint of the Oral Surgeon and Orthodontist"—HENRY F. WIESNEWSKI, D.D.S., Clinical Associate in Orthodontia, University of Pennsylvania School of Dentistry.

LUNCHEON—followed by presentation on: "The ABC's of Noise"—CHARLES REGAN WILLIAMS, Ph.D., Associate Professor of Industrial Hygiene, Harvard University School of Public Health.

SYMPOSIUM: *The Shoulder Cuff Syndrome*: RALPH A. JESSAR, M.D., Clinical Associate in Rheumatology, University of Pennsylvania School of Medicine. DONALD T. JONES, M.D., Professor of Orthopedic Surgery, Hahnemann Medical College. ANTOLIN RAVENTOS, M.D., Instructor in Radiology, University of Pennsylvania School of Medicine.

"Varicose Veins and Stasis Problems with Particular Reference to the Industrial Physician's Interest and Potentialities"—F. G. WAGNER, JR., M.D., Professor of Surgery, Jefferson Medical College.

Discussion by: RAYMOND PENNEYS, M.D., Instructor in Medicine, University of Pennsylvania School of Medicine.

Occupational Health Institute

PLANS for the Occupational Health Institute's participation in the 1956 Industrial Health Conference include a program to be held on Friday, April 27, sponsored jointly by the Philadelphia Chamber of Commerce and the Industrial Health Conference. A luncheon meeting is to be followed by a series of workshops on selected industrial health subjects of interest to management. Industrial leaders and representatives of management and labor will be invited from the 200-mile area surrounding Philadelphia. Speakers at the luncheon meeting will include the highest level leaders from industry, labor, government, (health and welfare) and the O.H.I. Individual workshop subjects will include: A President's Workshop; Compensation; Absenteeism; Retirement; Safety; Hygiene; Nursing. Industrial Medical Department personnel will be observers only at the workshops. Moderators and panel members are to be drawn from specialists in the respective fields, insurance representatives, compensation lawyers, labor representatives, etc.

IMA Banquet

J. M. KIMMICH, M.D., Chairman, Industrial Medical Association Banquet Committee, advises that a feature of the IMA Banquet at 7:00 P.M., Wednesday, April 25, at the Benjamin Franklin Hotel, Philadelphia, will be "the colorful and traditional performance of the Philadelphia Mummers." MURRAY BANKS, M.D., will have some advice on "What to Do Until the Psychiatrist Comes." The Committee has arranged for the advance sale of tickets; each table will have 10 places; the cost is $8.00 per ticket; all reservations are to be accompanied by remittance; places are to be assigned in order of receipt of application. The advance ticket sale will close April 6. Thereafter tickets may be purchased at the Registration Desk beginning on Monday, April 23, and continuing until noon on Wednesday.

The Railway Surgeons

AMERICAN ASSOCIATION OF RAILWAY SURGEONS will hold its Sixty-Eighth Annual Meeting on Tuesday, Wednesday and Thursday, April 10, 11, and 12, 1956, at the Drake Hotel, Chicago. The following, complete except as to three presentations, is the scheduled program:

"Indications and Contra-Indications for Surgery in the Jaundiced Patient"—WARREN H. COLE, M.D., Chicago.

"Advances in Arterial Surgery"—ORMAND JULIAN, M.D., Chicago.

"Anatomic Factors in Biliary Tract Surgery"—MANUEL E. LICHTENSTEIN, Chicago.

"The Traumatic Abdomen"—P. J. COGLEY, M.D., Council Bluffs, Iowa.

PANEL: *Primary Carcinoma of the Lung*: L. H. SLOAN, M.D., Moderator; EDMUND F. FOLEY, M.D., Internist; COYE C. MASON, M.D., Pathologist; WILLIAM E. ADAMS, M.D., Surgeon.

"Diagnostic Problems in Non-Malignant Bone Disease"—C. H. HATCHER, M.D., Chicago.

"Emotional Problems in Convalescence"— C. K. ALDRICH, M.D., Chicago.

"Use and Abuse of Antibiotics in Upper Respiratory Infections"— C. M. SMITH, M.D., Duluth.

"Diagnostic and Therapeutic Nerve Blocks"—JOHN S. LUNDY, M.D., Rochester, Minnesota.

PANEL: *Fractures of Neck of Femur*: CARLO SCUDERI, M.D., Chicago, Moderator; HAMPAR KELIKIAN, M.D., Chicago; RICHARD T. ODELL, M.D., St. Louis.

"Evaluation of Present Day Surgical Efforts in Curing Cancer"—GEORGE CRILE, JR., M.D., Cleveland.

"Plastic Surgery in Industrial Trauma"—C. L. STRAITH, M.D., Detroit.

"Dermatitis Caused by Overtreatment"—L. EDWARD GAUL, M.D., Evansville, Indiana.

"Prophylaxis of Infection in Open Wounds"—OSCAR P. HAMPTON, M.D., St. Louis.

"Medical and Surgical Treatment of Cirrhosis of the Liver"—J. K. BERMAN, M.D., Indianapolis.

Occupational Health Institute

FRANK A. CALDERONE, M.D., President of the Occupational Health Institute has submitted his Situation Report for the period June 1-December 31, 1955 to the Institute's Board of Directors and Advisory Committees. Regarding the OHI Service Bulletins, the Report says "requests for copies have come in almost daily from executives, doctors, hospitals, universities, health groups, trade associations, magazines and other sources, by telephone, telegram and letter."

Bulletin No. 1, entitled "Your Company . . . . Why an Accredited Medical Program?" was distributed to the number of about 12,000, and was the inspiration for articles published in a dozen or more magazines including *Safety Maintenance and Production, Hosiery Industry Weekly, American Gas Journal, Hospital Management, Office Management, Chemical Processing, Office Executive, Dealer Topics, Chemical and Engineering News*, and others. As a result, this Bulletin was re-ordered to fill additional requests.

OHI Service Bulletin No. 2, entitled "Health and Employer/ee Efficiency," was distributed in December. Among forthcoming articles based on this Bulletin is one soon to appear in *The Southern Banker*. The Dartnell Corporation of Chicago, management consultants, requested 1000 copies of this Bulletin for distribution to its Personnel Administration Service subscribers.

Presentation of the OHI Certificate of Health Maintenance was made to the Health Service of the University of Oklahoma School of Medicine and University Hospitals by Dr. Kieffer Davis on December 10, 1955. Left to right: Dr. Robert C. Lowe, Medical Director, University Hospitals; Dr. Jean S. Felton, Director of Health Service, University of Oklahoma School of Medicine; Dr. Mark R. Everett, Dean, University of Oklahoma School of Medicine; Dr. Davis, President, Industrial Medical Association, and Medical Director, Phillips Petroleum Company; Dr. Eugene R. Flock, Assistant Director, Health Service, University of Oklahoma School of Medicine; Mrs. Nellie Harrison, Chief Nurse, Health Service, University of Oklahoma School of Medicine.

OHI Service Bulletin No. 3, entitled "Chronological vs. Physiological Aging in Industry," was distributed in January.

The certification program shows that during the period of this report there were 99 requests for certification; 63 surveys were referred to Regional Consultants; 32 surveys were referred to the IMA Committee on Standards; 14 companies were accredited; and presentation ceremonies were held at Solar Aircraft Company, Des Moines, Iowa; Merck & Company, Cherokee Plant, Danville, Pennsylvania; L. S. Ayres & Company, Indianapolis, Indiana; Olmsted Air Force Base, Middletown, Pennsylvania; Chesapeake & Potomac Telephone Company, Washington, D.C.; and Simplex Wire & Cable Corporation, Cambridge, Massachusetts.

Books

From the Outside

CHLORAKNE — Akneartige Hautveränderungen durch chlorierte aromatische Kohlenwasserstoffe (Chloracne—Acne-like Changes in the Skin through chlorinated aromatic Hydrocarbons): DR. WERNER BRAUN, Dermatology Clinic, University of Heidelberg. Editio Cantor, Aulendorf i. Württ, 1955, pp. 90, paper-covered, 30 illustrations (Price 12.80 Deutsche marks).

Whether endogenous or exogenous has been the conjecture on the pathogenesis of chloracne over the years. After a nearly complete review of the literature with 138 references and a description of his own research using animal and human (himself) subjects, the author presents an impressive thesis leading to the conclusion that the acne-like skin affection is the result of external action of aromatic chlorinated hydrocarbons. With scientific impartiality, Braun also discusses evidence which might support internal causation of chloracne.

This monograph is presented in two parts. The first reviews the existing state of knowledge on chloracne; the second, the experimental investigations of the author. In most texts, it is noted, there is much of controversy and uncertainty concerning the etiology of chloracne. Clinical observations had pointed as much toward endogenous development as toward exogenous, without definite proof either way.

Of much practical value to the dermatologist and the industrial physician is information permitting early comprehension and proper handling of situations resulting in the sudden appearance of chloracne.

Systemic poisoning by the chlorinated naphthalenes is included in the discussion. The first animal experiments demonstrating that these compounds are hepato-toxic, causing liver necrosis in dogs, are ascribed by Braun to Flinn and Jarvik, who published their research in 1936. Although this appears to be the first complete paper on such findings, Braun should have accorded K. B. Lehmann the first place in demonstration of acute yellow atrophy of the liver on exposure of animals to the chlorinated naphthalenes. Lehmann referred to this work as early as 1919 in his "Arbeits- und Gewerbehygiene," a volume of "Handbuch der Hygiene."

The illustrations are excellent and include both clinical manifestations and histological sections.

The author's experimental work was for the clarification of the pathogenesis of chloracne. The text indicates that this purpose of removing the origin of chloracne from the realm of conjecture to that of established knowledge has been achieved.

—W. A. COOK.

For the Surgical Resident

OPERATIVE TECHNIC IN GENERAL SURGERY, Edited by Warren H. Cole. Second Edition, October, 1955, Appleton-Century-Crofts, New York, pp. 1004, with 1247 illustrations. $20.00.

The new chapter on "Blood Transfusions and Allied Problems," by J. Garrett Allen, in this textbook is a valuable and concise summary of the subject. The surgeon's responsibilities in the use of blood transfusions are clearly pointed out and the author emphasizes the wise observation that the single 500-cc. transfusion of blood to the adult patient is a questionable procedure. Where only this single transfusion is given it is either unnecessary or is entirely inadequate in most cases. The indications for the use of plasma, plasma fractions and plasma substitutes are concisely discussed.

Another new chapter has to do with "Gastrointestinal Surgery in Infancy in Childhood," written by Dr. William L. Riker. This is a very clear discussion having to do mainly with the congenital anamolies, including atresias, pyloric stenoses, and herniae of various types. The simple drawings are of particular value, and this chapter can be read with interest by any surgeon who has occasion to operate on newborns and children.

Chapter 17 on the "Appendix," by Dr. John T. Reynolds, is devoted mainly to problems of surgical technique, and diagnosis is covered briefly. This is not surprising in view of the nature of the textbook as a whole, and explains why much of importance in diagnosis and differential diagnosis has been deliberately omitted. The discussion of the problems in the removal of the difficult appendix is well done, as is the discussion of complications, including abscess formation and abdominal wall infections. The pros and cons of drainage might well be discussed in greater detail.

Many of the other chapters have been revised to bring the material up to date since publication of the first edition. This textbook continues to be an essential one for the library of the general surgeon. It should be remembered that its subject is "Operative Technic" and that it does not attempt to go into all of the problems of pathology and diagnosis. Each chapter, however, has a general discussion of the subject from a surgical viewpoint that helps to bridge the gap between clinical considerations and the operation itself. Chapter 16 on the "Colon," by Drs. Roscoe R. Graham and Jessie Gray, is an excellent example of this point. This textbook is not for the medical student but it can be read with profit by every surgical resident.

—CHESTER C. GUY, M.D.

How Much?

SOME MONETARY ASPECTS OF WORKMEN'S COMPENSATION: Council on Industrial Health, American Medical Association, Chicago, 1955, pp. 96.

A substantial deficiency in pertinent literature of the past has been the lack of comprehensive information on the trend of dollar losses incurred for indemnity and medical benefits under workmen's compensation. To meet this need, at least partially, the Council on Industrial Health has undertaken this

study to provide the medical profession with a source book of factual information in practical non-technical form on:

Incurred losses for indemnity and medical benefits;

Distribution of the premium dollar;

Selected statutory and administrative provisions which may affect losses incurred;

Official medical fee schedules and related directives.

Air Pollution

PROBLEMS AND CONTROL OF AIR-POLLUTION: Edited by FREDERICK S. MALLETTE. Reinhold Publishing Corporation, New York, 1955, pp. 272, $7.50.

Air pollution, being International in scope, calls for international treatment of the subject. This book is comprised of the papers presented before the First International Congress on Air Pollution held under the auspices of the American Society of Mechanical Engineers in New York City. Not only were international situations discussed in these papers, but among the discussants were experts from six foreign countries.

Among the outstanding papers included are those on development of public opinion by Sir Hugh E. C. Beaver, who traced the period of inaction over the past seven centuries to the widespread activity of the last few years, and the paper by G. Edward Pendray who presents a workable plan for community relationships.

Current developments in the practical and the scientific aspects of air pollution are ably handled. The procedure followed in the Sarnia Survey is a model which may well be followed in other areas.

Much of the book is related to specific problems such as those of removal of sulfur dioxide from power-plant gases and design of incinerators.

The final group of five papers has to do with experience in air pollution in foreign countries.

Although this book lacks the continuity of a volume written by a single author, it includes the depth of treatment usually obtainable only where experts are presenting their own limited subjects. Accordingly, the papers have the ring of authenticity and include much which will prove to be of practical value in solving specific problems.

—WARREN A. COOK

Acute Toxicity of 2120 Substances

HANDBOOK OF TOXICOLOGY: WILLIAM S. SPECTOR, Editor. Wright Air Development Center, Wright Patterson Air Force Base, Ohio. WADC Technical Report 55-16. April, 1955, pp. 408.

In 1951 the National Cancer Institute and the National Institutes of the Public Health Service published a listing of 1329 chemical compounds that had been subjected to laboratory testing with respect to the causation of malignant or benign tumors. Foremostly that publication represents a brief tabular presentation of the nature and result of the investigation, together with literature citations.

This present handbook, although emanating from an entirely different source, bears striking similarity in format to the aforementioned. This volume lists 2120 items from "Abobioside" to "Zirconyl Sulfate." The highly condensed content indicates the animals subjected to experiment, the route of entry, the dosage, the time of death (if death supervenes), and one or more literature citations. The introduction includes the following language in exposition of the purpose and nature of the publication:

"This volume presents tabular data on the acute toxicity of various substances for several species of commonly used laboratory animals, as determined by oral or parenteral administration, or inhalation, of fatal doses. The guiding principle in selection of material has been that it be of basic importance and from reliable literature sources. Some data of value have had to be omitted either because they were not on hand for publication or because time has not permitted the necessary preparatory steps for printing. The fact that certain data have been compiled and are already in print, or available in other form, has not been regarded as a reason for excluding them from the Handbook. Every page of this volume has been examined for accuracy by the contributors of the data and by a panel of review experts.

"In tabulating this information the chief objective has been clarity of presentation. To maintain this clarity, only the most fundamental data appear in the body of the table. Footnotes have been used to supply additional facts in many instances so that simplification of the table structure could be achieved. Other material, pertinent to the values within the table but prohibited by the limitations of space, are to be found in the literature, and for this reason the reference for each line of data is presented on that line. Because of space limitations, only the principal author (initials omitted) is given for each reference. In several cases the values in the table have been calculated from the values in the references, e.g., from cc to mg/kg or from ions to salts. Chemical nomenclature, as it appears in the tables, has been kept exactly as contributed and is identical with that in the literature reference. Thus it may be that for some compounds proprietary names will be given and for others, official designations. However, a cross index at the back of the book contains a multitude of synonyms to facilitate location of any compound within the book."

A second volume is a prospect for the year 1956.

Emphasis on Treatment

SIGNS, SYMPTOMS AND TREATMENT OF CERTAIN ACUTE INTOXICATIONS: WILLIAM B. DEICHMANN, Professor of Pharmacology, School of Medicine, University of Miami (Florida) Printing Arts Department, Coral Gables, 1955, pp. 157, $2.00.

About 25 years ago, Dublin and his associates published a pocket brochure on "Occupation Hazards and Diagnostic Signs." For many a budding industrial hygienist and physician that pocket-piece became indispensible in a day when pertinent publications were a rarity. Without being so planned, this present pocket manual bears some resemblance to that prior item but with its emphasis on diagnosis and emergency treatment. This manual is not limited to industrial exposures and consequent emergencies but its contents are rich in consideration for the industrial emergency. Industrial medicine is weak in its development of appropriate therapy.

This manual refers to numerous publications which appeared in 1954 and 1955. It also assembles the scattered old. For any intern, resident, or other physician responsible for emergency services anywhere, this manual in the left-hand pocket of the white coat will prove nearly as serviceable as the stethescope about the neck or the ophthalmoscope in the right-hand pocket.

This valuable pocket-piece was prepared for the author's staff with no prime intent of wide distribution. It is now being made available for general distribution to the profession.

INDUSTRIAL MEDICINE AND SURGERY

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Resurgence in Religion

SOME YEARS ago George Bernard Shaw was asked for his appraisal of Christianity. His reply in substance was that there could be no appraisal of Christianity since it had never been applied. Some individuals and some families live lives well in keeping with the gentle tenets of Christianity, but nations do not. On our money we inscribe "In God We Trust," but a postscript might be added, "We Do Not Practice His Teachings."

Yet a revitalization in religion widely is evident. It is not sufficient to state that we in America are on the verge of a religious upheaval. The verge has been crossed. We are in the midst of a far-flung religious renaissance, although still far from its flood. Not within the memory of living man has any equal quickening in spiritual pulsation been at hand. Outstanding national secular periodicals devote major portions of entire issues to beautiful portrayals of religion. That could not have happened even 15 years ago. National daily newspapers may devote front-page columns to religious matters. Churches have more members than ever before. Sunday schools have tripled in attendance. Books on religion continue to be best sellers. Columns in periodicals and the daily press are served by the ministry, with measurable reader devotion. Great evangelists have attained to enormous prominence. While many ascribe to them the upsurge, in reality they are a product not a creator.

The human soul has new and deep yearnings for satisfactions sadly missing. Christianity never may have been tried out, but right now the demand for acquaintance with Christianity is teeming and mounting.

Overprivileged America, often willing to be neglectful of the spiritual, tried to convince itself that material plenty would satisfy all needs. Comparative wealth has become the lot of most, yet the nation stands empty-handed wondering why the hunger. Ambitious America sought to supply education for all and high education for the many, believing, in its infantilism, that education was the ointment of soul fulfillment. The land abounds with those bearing the label of education, but the great emptiness remains. Bountiful America, through unwanted but still bloody wars, sought new worlds of idealistic purport, chiefly for others. The nation still is poking around in the ashes of disillusionment. Generous America lavished its moneys on less favored countries, hoping against hope that sparks of goodness would lead to flames of spiritual amplification the world over. Instead, the results have been scarred by snickering, greed, and enlarged envy. America as a nation stands more than empty-handed as a spiritual entity, it stands stark naked. It is no miracle that a resurgence in religion is grasping the people. That is a last resort when it should have been the first resort. Even yet, Christianity may be tried out in its gracious offerings.

AND WHAT has all this to do with occupational health? Through what justification is space here allotted to this renewal of interest in things other than mundane? The significance is that this religious revitalization is reaching into industry. In more than a few areas industrial chaplains may be found within the mills and shops. Religious counselors are joining hands with medical counselors on the work premises. Daily or weekly a number of industrial plants now provide opportunities for devotional services in the midst of production pursuits. When this shall have gone

so far that the world may see industrial America on its knees in humble supplication for guidance —with that humility shared alike by management and labor—then the joyous hope will arise that Christianity belatedly may come into its own.

In the first factory in America, in 1644, at Saugus in Massachusetts, one of the charter requirements was that all workers should be furnished religious instruction. Quickly that requirement was stricken from the charter. Rather quickly that factory failed. Possibly there is no connection. But possibly that thrusting of religious endeavor out of the factory marked the first grievous error in America's development of sturdy industrial relations between management and labor.

Today's sincere need is not for the dour, hellfire pronouncements likely to have been handed down by the stern-hearted Puritan industrial management of the period. Of religious instruction perhaps there has been far too much already. Christianity as the influence it deserves to be in and out of industry, will be effective only when it wells up bounteously in the hearts of men and women. The time is not for booming crusades, but the time is for heart-ears that will hear the stirring motivations to every man to build his own cathedral within his own soul.

The Pan-Specialist in Medicine

DR. ROBERT A. KEHOE, Vice-Chairman in Occupational Medicine of the American Board of Preventive Medicine, in a recent scientific meeting, made this statement: "The full-time practice of occupational medicine requires more intellectual competence and a greater variety of knowledge than does any other field of medical practice."

On first reading, that language might be rated only as a revealment of "class" pride, or, worse, it might suggest a mote of insecurity as to the position of industrial medicine in the hierarchy of total medicine. Might not the ophthalmologist make the claim that, to be a superior ophthalmologist, perforce he must know all the ailments of the human body and, ergo, his specialty has no narrow confines? Might not the psychiatrist or dermatologist take the same position?

A FULL and objective examination will establish the rightness of Dr. Kehoe's assertion. A large corporation, recently seeking the services of a skilled Medical Director, in its bill of required capacities listed 34 different areas in which this physician would be expected to function with facility. All these requirements were close to medicine, although only four required the laying of the physician's hands onto patients. What other physician is called upon to bring to his workroom, in addition to a working knowledge of all of clinical medicine, a familiarity with occupational diseases, industrial hygiene, industrial toxicology, fatigue, safety, medical physics, job placement, rehabilitation, compensation laws and practices, court procedures, alcoholism, counseling, retirement practices, insurance, budgets, record-keeping, report preparation, food handling, human relations, labor relations, and staff training. Add to this the demand that the physician become familiar with the industry itself, its raw materials, intermediate materials, machines, ancillary agents, final products, and company policies. Yet there is more. Insistence that the Medical Director join in community agencies for health, hospital activities, local and state medical societies—never neglecting national scientific conferences, and making his own contributions to the literature of his specialty.

IT IS HALF-WAY agreed among physicians that some of the best specialists are those who barely squeaked by as to medical graduation, who entered some narrow medical specialty, who have no wide diversity of interests, who endlessly plod their ways in circumscribed medical pursuits. The obstetrician, intelligent but not brilliant, who has delivered 3000 infants and is doing little else may be a far more desirable obstetrician than the exceedingly brilliant one who has delivered only 300 newcomers. The devoted but not starry-eyed dermatologist who sees 5000 patients yearly and with some scientific intelligence may be a better dermatologist than the ultra-scientific one who sees only 500 patients in that time.

All that is admirable but illy becomes the Industrial Medical Director whose major forte is ability to perform, without frustration and successfully, a hundred little-related tasks. Functional diversity is a stark necessity for him. One hour he may be called upon to advise as to required prophylactic measures for the sales manager prospectively journeying to India, and the next hour to guide the chief installation engineer, called to Iceland in winter, as to comfort clothing. Without a shudder the Industrial Medical Director may undertake to advise management on almost any item, physiologic, pharmacologic, or pathologic—dodging only such remoteness as ballet dancing or wet nursing. Yet those last-named arts involve unique physiologic demands.

Always there is the lament that so few young physicians are willing to undergo the arduous academic and practical training in order to qualify as an Industrial Medical Director. Possibly the ultimate reason is that that specialty does demand "more intellectual competence and a greater variety of knowledge than does any other field of medical practice."

SMOOTHAGE ACTION IN CONSTIPATION

Roentgenographic pattern of colon mass propulsion:[1]

(1) Ascending colon filled.
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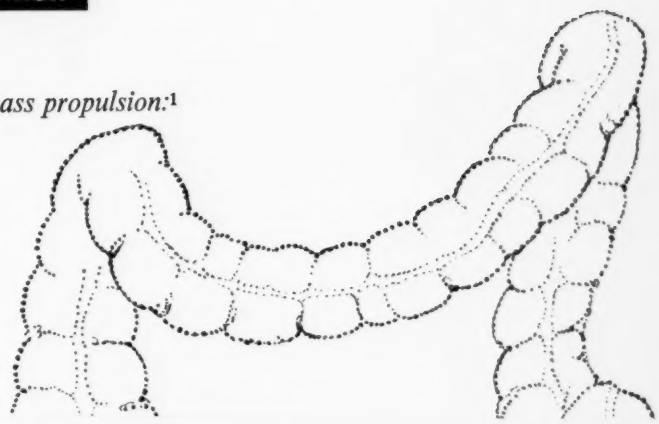

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Date_____

I wish to recommend a physician* for membership in the INDUSTRIAL MEDICAL ASSOCIATION. I (have) (have not) discussed this application with him.

Signed_____

Address_____

***Name**_____

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nervous fatigue and tension, improper intake of fluid, improper dietary habits, failure to respond to the call to stool, lack of physical exercise and abuse of the intestinal tract through excessive use of laxatives.[2]

The characteristics of Metamucil permit the correction of most of these factors: it provides bulk; it demands adequate intake of fluids (one glass with Metamucil powder, one glass after each dose); it increases the physiologic demand to evacuate; and

persing agent. It is supplied in containers of one pound—also four ounces and eight ounces. G. D. Searle & Co., Research in the Service of Medicine.

1. Best, C. H., and Taylor, N.B.: The Physiological Basis of Medical Practice: A Text in Applied Physiology, ed. 5, Baltimore, The Williams & Wilkins Company, 1950, pp. 579-583.

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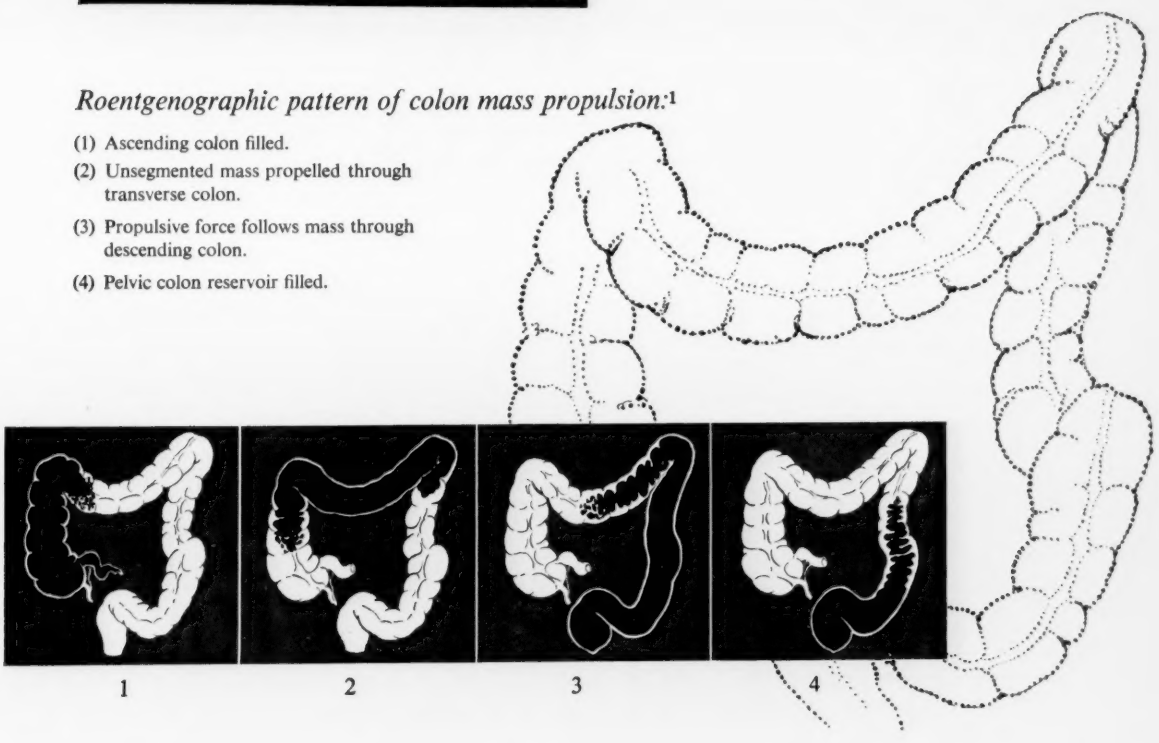

Reestablishing Bowel Reflexes with Metamucil®

Nervous fatigue, tension, injudicious diet, failure to establish regularity, too little exercise, excessive use of cathartics—all factors which contribute to constipation.[2]

Sufficient bulk and sufficient fluid form the basic rationale of treatment of constipation. Metamucil (the mucilloid of Plantago ovata) produces a bland, smooth bulk when mixed with the intestinal contents. This bulk, through its mass alone, stimulates the peristaltic reflex and thus initiates the desire to evacuate, even in patients in whom postoperative hesitancy exists.

Correction of constipation logically, therefore, lies in the suitable adjustment of such factors as nervous fatigue and tension, improper intake of fluid, improper dietary habits, failure to respond to the call to stool, lack of physical exercise and abuse of the intestinal tract through excessive use of laxatives.[2]

The characteristics of Metamucil permit the correction of most of these factors: it provides bulk; it demands adequate intake of fluids (one glass with Metamucil powder, one glass after each dose); it increases the physiologic demand to evacuate; and it does not establish a laxative "habit." Metamucil, in addition, is inert, and also nonirritating and nonallergenic.

The average adult dose is one rounded teaspoonful of Metamucil powder in a glass of cool water, milk or fruit juice, followed by an additional glass of fluid if indicated.

Metamucil is the highly refined mucilloid of Plantago ovata (50%), a seed of the psyllium group, combined with dextrose (50%) as a dispersing agent. It is supplied in containers of one pound—also four ounces and eight ounces. G. D. Searle & Co., Research in the Service of Medicine.

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News, Comment, Opinion

CANADIANS lose 143,150 years—a period many times longer than all recorded time—of working hours, in one year through illness. This figure does not take into account the extra years lost every year in the home, through illness. —Health League of Canada.

Occupational Hazards

THE National Safety Council rates office work as more dangerous than employment in a powerhouse or in the construction industry. The Council claims there are only four occupations more hazardous than office work: mining, lumbering, quarrying, and cement production. Disabling injuries among white-collar employees are 2.6 per million manhours worked.

—*Horizons*, quoted in *The Management Review*, January, 1956.

Life Expectancy

LAST YEAR, for the first time, the life expectancy of industrial workers equalled that of the general population. Forty years ago, when reliable information on this relationship first became available, the industrial worker, on the average, died seven years earlier than the individual not employed in industry.

—From *Medical Advance*, November-December, 1955.

Trudeau School of Tuberculosis

THE TRUDEAU School of Tuberculosis will present its forty-first annual session, beginning Monday, June 4, 1956, and concluding June 29, 1956. The course will cover all aspects of pulmonary tuberculosis and also certain phases of other chronic chest diseases including those of occupational origin. As the Trudeau Sanatorium is now closed, the clinical material for the course will be derived from Ray Brook State Tuberculosis Hospital, Tupper Lake Veterans Facility, Will Rogers Memorial, and Sanatorium Gabriels. The skills of the research laboratories and of the practicing tuberculosis specialists of Saranac Lake will be called upon as in the past to participate in the program. There will also be greater participation than previously by guest lecturers from different parts of the country, which it is believed will help to make the course more interesting and authoritative. The Trudeau School of Tuberculosis has been approved for training of Veterans under Public Laws and those desiring to obtain Veteran's benefits should clear their registration with the Veterans Administration before the session begins. The tuition fee for the four-week course is $100. For information and registration forms, write: Secretary, Trudeau School, 7 Church Street, Saranac Lake, New York.

Special Training

PSYCHIATRISTS get special training for work in industry under fellowships, established by Carnegie Corporation, at New York State School of Industrial and Labor Relations, Cornell University, to meet ever-increasing need for psychiatrists with experience in industrial problems. Program includes two semesters of campus study and one year of field experience, preferably under joint supervision of personnel and Medical Departments. Required subjects include personnel administration, collective bargaining, protective labor legislation, sociology, applied anthropology, and social pyschology.

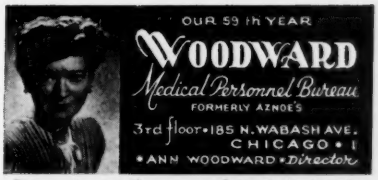
—*Industrial Relations News*, December 10, 1955.

Recognition

SONOCO PRODUCTS COMPANY was awarded the Industrial Medical Association's Citation for Health Achievement in Industry at the 1955 Industrial Health Conference, Buffalo, April 27. This achievement was represented by the Company's new Medical Department at Hartsville, South Carolina. *Textile Age*, December, 1955 (published at Cos Cob, Connecticut) has an illustrated description of this Medical Department, outlining its 10-point program.

The Difference

HAVE YOU ever wondered just how the private practitioner differs from the average full-time industrial physician? After all, all of us went to the same colleges, studied under the same professors, interned at the same hospitals, took the same board examinations, and belong to the same medical societies and hospital staffs. We treat a laceration or



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Medical Director: (a) Since 1948, Medical dir, large indus medical facility; seeks only challenging oppor preferably in East; middle 50's; immed avail.

Medical Director: (b) M.S. (Medicine); Dipl. internal medicine; Board eligible, cardiology; 6 years, successful priv pract, int medicine & instructor, cardiology; Phil area only; middle 30's.

Ass't Medical Director: (c) M.S. (indus medicine); A.E.C. Fellowship; 3 yrs, med officer, USAMC; seeks indus medicine, with or without atomic installation, pref in Illinois or Wisc; past yr, gen'l pract in lge industrial center. early 30's.

Staff Phy: (d) Graduate, Hanneman Medical College; past 6 yrs, successful private gen'l pract; seeks indus medicine with regular hours, salary & security; early 30's; inter in indus med as career; any locality but prefers Pa., Va., or East.

Staff Phy: (e) MD degree, Duke; complet'g training in internal medicine; prefers indus medicine in Calif, Texas, Ohio, Pa., New Jersey; age 29; married, 1 child (4).

Staff Phy: (f) MD degree, Jefferson Medical College; 2 years, medical officer, USAMC; 3 years, private gen'l pract; desires indus med with regular hours; consider any large city but prefers New Jersey, Pa., New York. seeks indus med as career. age 30.

Staff or Assistant Med Dir: (g) MD degree, Hahnemann Med College; 15 years, Ass't medical dir, ass't dir and, now, admin dir, important Liberal Arts University; seeks indus medicine; experience, both clinically & administratively should prove valuable; present position offers little further oppor for development; mature man with sound values; any locality but prefers Penna or East. late 40's.

Staff: (h) Internal medicine & physical therapy interests; 18 years, successful private gen'l pract; desires to specialize in one branch of medicine; prefers full time appointment in large industry; middle 40's. widower; any locality.

Staff: (i) Medical Degree, Harvard; Board eligible internist; past 2 years, private gen'l practice; seeks indus medicine; excellent references; early 30's; draft exempt; any locality. immed available.

Staff: (j) Excellent residencies, 1 year each, general and orthopedic surgery; since '52 industrial physician, U.S. Arsenal; prefers West Coast. age 32.

Staff or Ass't Medical Director: (k) MD degree, Univ of Maryland, Schl of Med; several years successful private practice; 3 years, plant physician, important company, major industry; (chemicals); while prefers med directorship, small industry, will consider assistantship, if very large company or staff position provided opportunity exists for advancement in short time; excellent personality with good experience in indus medicine; early 40's; recommended.

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a fracture occurring on the highway, in the home, or in the factory in the same manner. Nevertheless, there is one point on which most general practitioners doing part-time industrial work differ greatly from full-time industrial physicians. Almost invariably the general practitioners lack familiarity with the working environment of the employees they are treating. It is my sincere belief that every physician doing industrial medicine, whether he be a full-time industrial physician or a general practitioner, should be thoroughly familiar with every process occurring in those plants to which he gives attention if he expects to render the best service possible.

—From "Relationship Between the General Practitioner and the Industrial Physician," by EARL F. LUTZ, M.D., in *What's New in Industrial Nursing*, January, 1956.

"Fearfully & Wonderfully Made"

AS AN ITEM of curiosity to show how complicated the human body is, consider this: a piece of human skin the size of a postage stamp contains three million cells, a yard of blood vessels, four yards of nerves, 100 sweat glands, 15 oil glands, and 25 nerve ends.

—*Today's Health*, January, 1956.

Absentee Procedures

ABSENTEE procedures outlined for employees of Owens-Illinois, Gas City, Indiana, as follows: "Sick absentee" report must be made to supervisor at earliest opportunity. If absence lasts more than two days, sick absentee card must be taken to nurse, who issues "return to work" pass and clock card. Doctor's examination is given if there is doubt about employee's fitness. "Asked off" request must be made to supervisor at least 24 hours in advance of shift. Excuses will be granted for any number of reasons, from personal business to religious holiday. "Report off" is made to supervisor before start of shift for unexpected emergency conditions, such as sickness or death in family, baby sitter trouble, transportation breakdown. "No reports" are subject to immediate disciplinary action. They include absences without legitimate excuse, without report to foreman 24 hours in advance. If person does not report for seven continuous days, he is discharged.

—From *Industrial Relations News*, VI:1 (January 7) 1956.

Causes of Absenteeism

ABSENTEEISM costing industry more than $5 billion yearly in terms of services and lost production, according to conservative estimate of Research Council for Economic Security, whose recent comprehensive investigation of problem indicates that, if all data were available, loss from absenteeism might be as much as $10 billion. "There is the direct loss of wages and income for the workers and the cost of medical care, in addition to the production loss," reports Gerhard Hirschfeld, Council's Director. "These are considerable, even with the extensive protection of group sickness compensation, hospitalization, surgical insurance and prepaid plans prevalent in industry today." Absenteeism reduction programs should include following points, according to recently-published findings of Council's seminar and workshop: Adequate absenteeism records should be maintained by every company. (It

for every emergency

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in sterile pack jars—ready to use—
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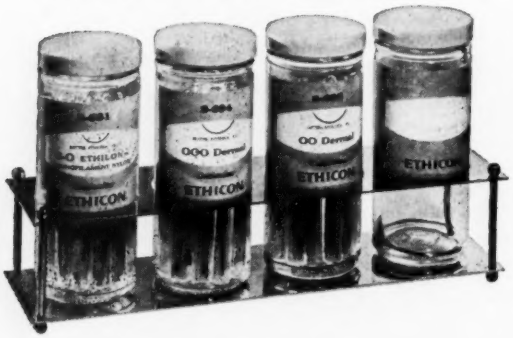

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was recommended that some central agency make available national summaries of representative experience, with which company records could be compared.) Program should be comprehensive, should not concentrate solely on "absence-prone" worker, because real causes of absenteeism are many, involving general factors of morale, proper job placement, sense of responsibility, home and family problems, worker's health. Company medical program can play important role, should include periodic medical examinations and follow-up of illnesses (permitting early diagnosis of possible serious disability), should assist workers in securing proper treatment. Employee benefit plans should be carefully evaluated to determine how they can aid effectively in absenteeism control.

—From *Industrial Relations News*, VI:1 (January 7) 1956.

How Much is Too Much

ABSENTEEISM is here to stay. Nobody would debate this lamentable point. But how much absence is inevitable and how much preventable? The question continues to plague companies of every size and shape. One firm feels fairly satisfied if the absence rate is held to 6% or 8%. Another worries about a 3% rate, and the search for objective criteria of what's a good attendance record or a poor one goes on. Though it doesn't fill the need for comprehensive nation-wide statistics, a recent study by the Merchants and Manufacturers Association of Los Angeles does provide an illuminating picture of absenteeism in one important industrial area. Among the important findings: The average one-month absence rate for 219 firms with 109,000 employees was 2.8%. When exempt salaried employees were removed from the calculation, the rate was an even 3%. Night shifts (particularly the third or "graveyard" shift) have higher absence rates than day shifts. This is true for both male and female employees and for hourly-paid as well as non-exempt salaried employees. But the differences between day-shift and night-shift absentee rates is more pronounced among female office employees than among female hourly production workers. Over all, the absence rate for female employees was higher than the male rate. Absentee rates for office workers were in general lower than for shop employees. But managerial, professional, and technical people had a better record than either of these groups. Monday's a bad day. The absence rate in this study was 3.3% for Monday but only 2.6% on Wednesday and Thursday. Tuesdays and Fridays both had rates of 2.8% in this study. Making Monday a payday helps; the absence rates of firms that pay their hourly people on Monday were 2.6%. Employers who provide sick pay had a slightly higher average absentee rate (3.1%) than those who don't (2.8%). Requiring attendance before and after a holiday helps cut absenteeism, as might be expected. Those companies requiring attendance the day before the holiday showed a 1.9% absentee rate compared with 2.3% for those who don't. Those requiring work on the day after the holiday had a 2% rate compared with 3.6% for those who don't. One interesting finding: Large firms participating in the study didn't have appreciably higher rates of absence than small ones. And extending the

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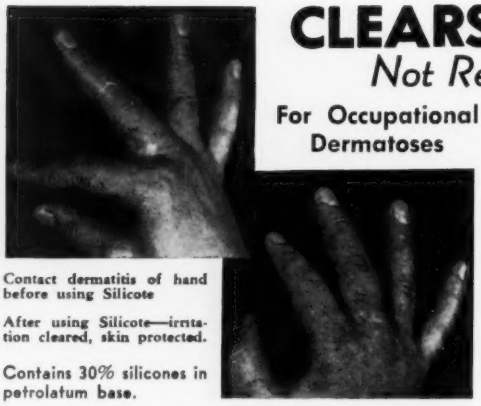

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Silicote protects skin against aqueous irritants and permits skin to heal. Patients can continue normal work during Silicote use. It adheres to skin, is inert. Send for samples.

1. Talbot, J.R. et al: J. Inv. Derm. 17:125
2. Morrow, Grant: Calif. Med. 80:21

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workweek over 40 hours did not affect the rate, either. Though the Los Angeles survey yields no over-all cost figures, one company did provide a useful example of how to figure this cost by computing the cost of the additional manpower needed to replace the absentee. This manufacturer's production schedule called for 10,000 direct labor hours per week for the year, or an average of 250 employees working 40 hours a week. The firm had an absentee rate of 5%. To complete the direct labor requirement, compensating for lost production due to absences, it was thus necessary to employ 263 people instead of 250. These 13 additional employees were machinists, earning $2 per hour—a total cost of $54,080. Since 40% of the absences were not paid for through the sick-leave program, the added direct labor cost was actually 60% of $54,080, or $32,448. On this basis, the added per-unit production cost due to absenteeism could readily be calculated.

—*Employer Relations Bulletin* (National Foremen's Institute), in *The Management Review*, January, 1956.

Accidents and Age

ONE of the most common reasons offered for discrimination against the older worker is that he is more of an accident risk than the younger worker. That this view is not justified has been demonstrated repeatedly in industry, automobile driving, and aviation. In terms of frequency rates, workers between 40 and 54 had rates only about 66% as high as workers under 21, and 70% as high as those in their 20's, in one study covering 26,000 employees in four plants. The rate

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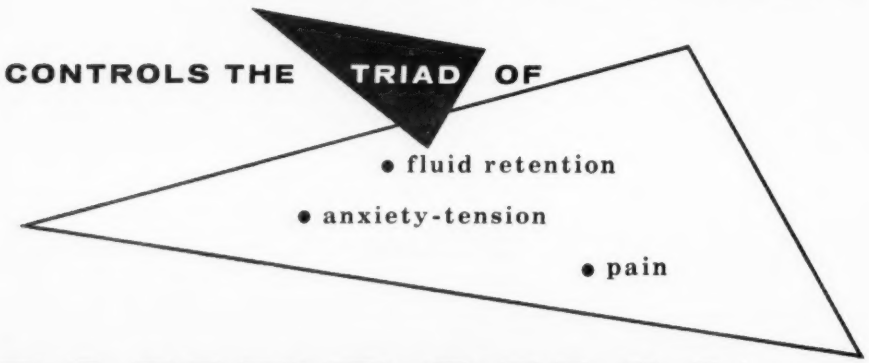

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for workers of 60 years and older was lower than for those under 21, and about the same as for those between 21 and 29 years of age. A number of other studies agree with the general finding of a decline in accidents with age. In this respect, the only disadvantage of the older workers is that their disabilities last longer once they are injured; they require longer healing periods and more frequent dressings, especially those over 60 years of age. The frequency of automobile accidents is of interest in connection with the relationship between age and accident rates. In one study, the frequency of accidents by age was compared to the expected incidence based on the age distribution of drivers in the State of Connecticut. The 20-29 year age-group has a much larger accident-rate than would have been expected on the basis of the number of licensed drivers in this group. Individuals over 30 years of age, on the other hand, had fewer accidents in proportion to the expected number. The curve for persons over 60 tends to approach the curve for expected frequency. Similar findings have emerged from studies in other states, even when differences in miles driven

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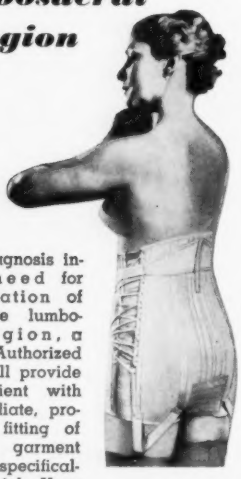

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at different ages are taken into account. Since the groups below 25 years consistently score higher on motor coordination and skill tests, the results of such studies have emphasized the need for training young drivers not only in driving habits but also in safe attitudes. The higher accident rate of youthful drivers has led certain automobile casualty companies to set rates partly on the basis of age.

—From "The Psychological Aspects of Aging," by ROSS A. MCFARLAND, PH.D., SC.D., in *Bulletin, New York Acad. Med.*, January, 1956.

Radiological Safety Conference

RADIOLOGICAL Safety Conference to help industry protect its workers from on-the-job hazards of atomic energy and other radiation was being held at Canisius College, Buffalo, January 17-19. This Conference was jointly sponsored by the New York State Department of Labor and Canisius College. It was designed to train the trainers—to acquaint safety engineers and other supervisory personnel with problems and control techniques of atomic energy and other radiation in industry. The supervisors also were given advice on training workers to protect themselves. Instructors included faculty members of Canisius College, and physicians and engineers of the New York State Labor Department's Division of Industrial Hygiene. A highlight of the Conference was a discussion of New York State's new worker-safety regulations — Industral Code No. 38—by the persons who will enforce it. The Code, which became effective on December 15, is intended to protect the approximately 150,000 workers in New York State who may be exposed to the effects of radiation while at work. Practical control techniques as applied in factories will be stressed. Minimum instruction in basic atomic physics will be given, but only enough theory will be presented so that fundamental problems may be solved. Topics discussed included the problem of radiation control in industry, principles and properties of radiation, principles of radiation protection and control, instrumentation, the radiological safety problem in industry, provisions of New York State Industrial Code Rule No. 38 relating to radiation protection, and ventilation.

—News Release.

Absenteeism

is a great hazard in industry.

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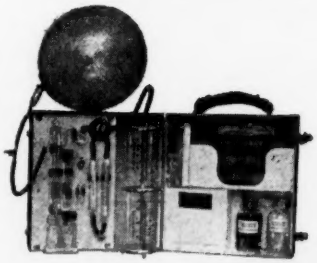

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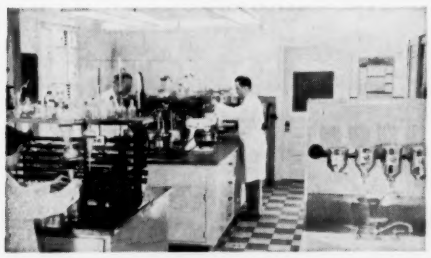

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*Trapnell, J. M., Jr., and Linder, E. K.: The Electrocardiogram in Industry, Indust. Med. & Surg. 24:335 (Aug.) 1955

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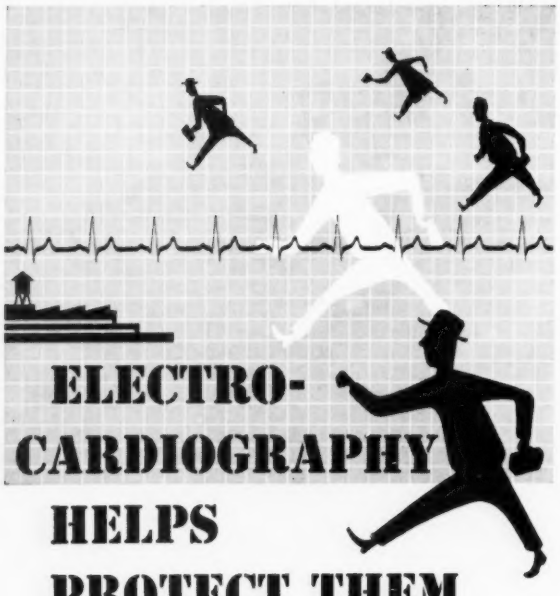

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Bibliography:

1. OVERHOLT, B. M.: CARDIOLOGY — Routine Electrocardiography in Industry. INDUSTRIAL MEDICINE & SURGERY, 19:11, Nov. 1950.
2. TRAPNELL, JOHN M., JR., and LINDER, E. KERN: "The Electrocardiogram in Industry" INDUSTRIAL MEDICINE & SURGERY, August, 1955.
3. DURHAM, J. R., and MCGEE, L. C.: "The Electrocardiogram in the Examination of the Industrial Worker" ANNALS OF INTERNAL MEDICINE, 41:5, November, 1954.

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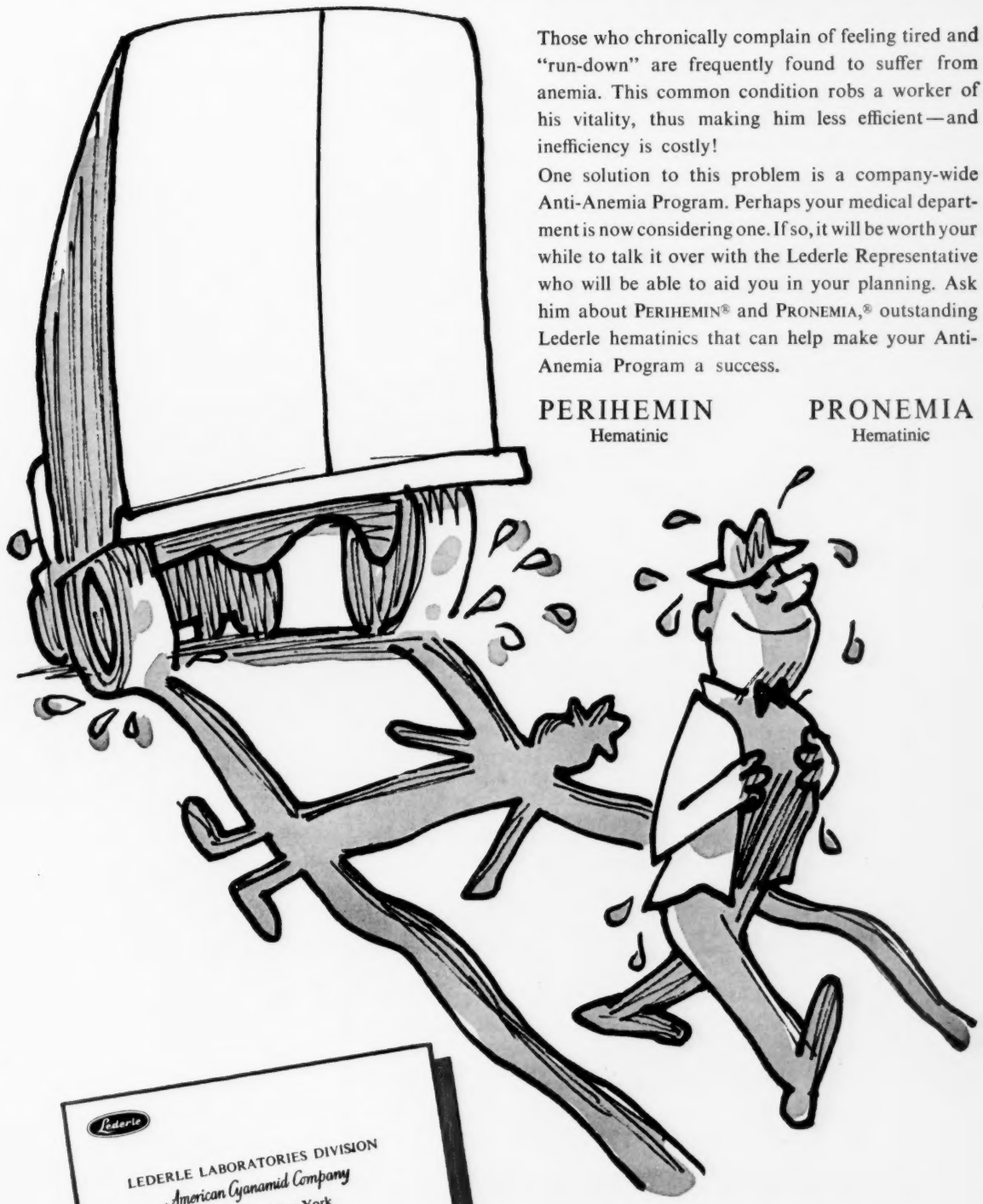

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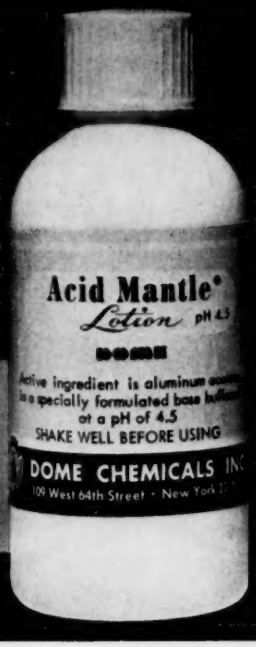

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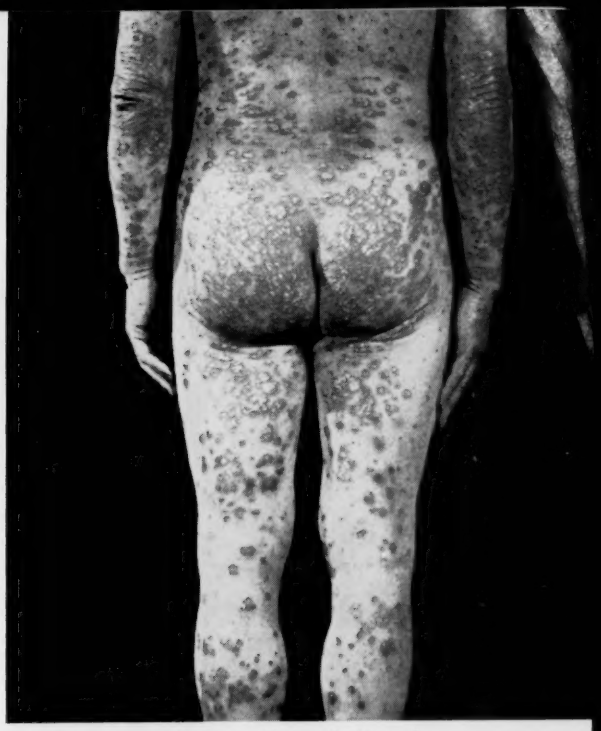

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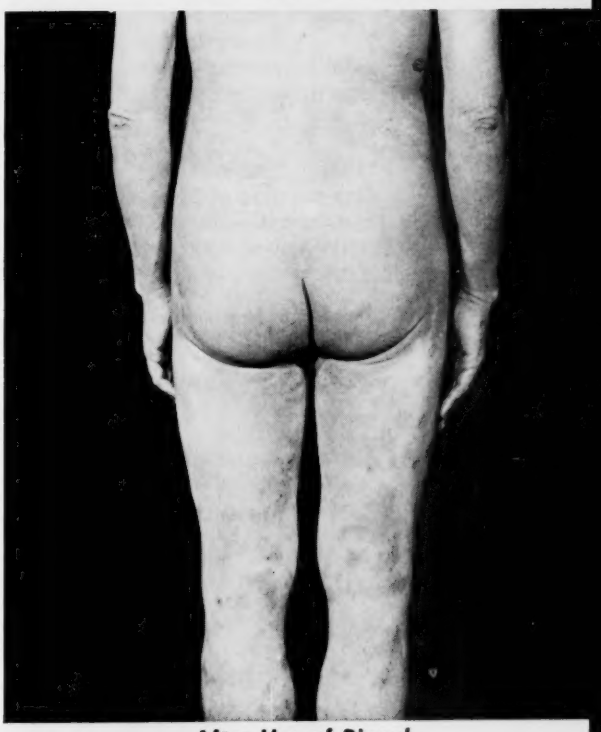

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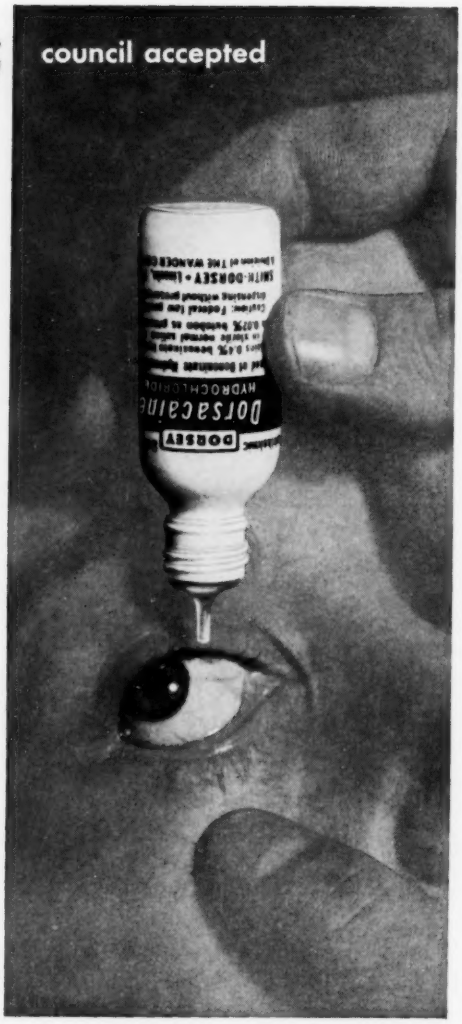

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*Schlegel, H. E., Jr., and Swan, K. C.: A. M. A. Arch. Ophth. *51*:643 (May) 1954.

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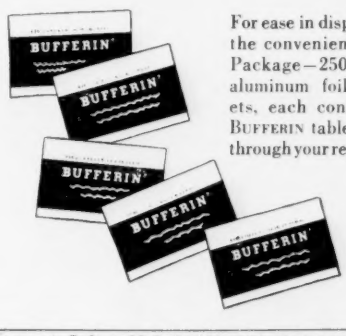

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